

OPERATOR	FIELD NAME	Well name/No.	Rig Name & No.	Job No.	Calculation Method	Minimum Curvature								
Sandridge Energy, In	Saddle	Pepper 3419 4-4H	Lariat 41	04211-431-22	Proposed Azimuth	186.16°								
MWD OPERATOR	DIR SUPERVISOR	COUNTY	STATE	Start Date	Depth Reference:	RKB								
Charles Alderman Jr	Roy Ramsey	Comanche	Kansas	27-May-13	Tie Info:	MWD								
DipA:	65.07	Mag Field: 0.51674	Mag Dec. 0.00	Total Cor.: 5.89	Job Service:	Gamma-Dir.								
Mag Spacing Req. Below 11	Mag Spacing Actual Below 20	Mag Spacing Req. Above 15	Mag Spacing Actual Above 42											
Survey Number	Survey Depth (ft)	Inclination (deg)	Course Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	N/S (ft)	E/W (ft)	Coordinates	Distance (ft)	Closure Direction Azimuth (° / 100')	Dogleg Severity (° / 100')	Build Rate (° / 100')	Walk Rate (° / 100')
Tie-In	0.00'	0.00°	0.00°	0.00'	0.00'	0.00'	0.00'	0.00'	0.00'	0.00'	0.00°	0.00°	0.00°	0.0°
1	250.00'	0.25°	198.60°	250.00'	250.00'	0.53'	0.52'	0.17'	S	0.55'	198.60°	0.10°	0.1°	79.4°
2	500.00'	0.15°	198.60°	250.00'	500.00'	1.38'	1.34'	0.45'	S	1.42'	198.60°	0.04°	0.0°	0.0°
3	720.00'	0.92°	198.60°	220.00'	719.99'	3.39'	3.29'	1.11'	S	3.47'	198.60°	0.35°	0.4°	0.0°
4	925.00'	0.72°	198.60°	205.00'	924.96'	6.26'	6.07'	2.04'	S	6.41'	198.60°	0.10°	-0.1°	0.0°
5	1036.00'	0.70°	198.60°	111.00'	1035.96'	7.60'	7.38'	2.48'	S	7.78'	198.60°	0.02°	-0.02°	0.00°
6	1493.00'	0.90°	222.70°	457.00'	1492.91'	13.21'	12.66'	5.81'	S	13.93'	204.64°	0.08°	0.04°	5.27°
7	1949.00'	0.60°	41.10°	456.00'	1948.90'	14.13'	13.49'	6.67'	S	15.05'	206.29°	0.33°	-0.07°	-39.82°
8	2405.00'	0.80°	47.60°	456.00'	2404.86'	9.79'	9.55'	2.75'	S	9.93'	196.05°	0.05°	0.04°	1.43°
9	2862.00'	0.70°	47.40°	457.00'	2861.82'	5.29'	5.50'	1.67'	S	5.75'	163.17°	0.02°	-0.02°	-0.04°
10	3319.00'	0.10°	348.70°	457.00'	3318.81'	2.81'	3.22'	3.64'	E	4.86'	131.52°	0.14°	-0.13°	65.93°
11	3775.00'	0.20°	343.70°	456.00'	3774.81'	1.70'	2.07'	3.34'	E	3.93'	121.78°	0.02°	0.02°	-1.10°
12	4231.00'	0.40°	282.30°	456.00'	4230.80'	0.79'	0.97'	1.56'	E	1.84'	121.76°	0.08°	0.04°	-13.46°
13	4447.00'	0.00°	246.70°	216.00'	4446.80'	0.71'	0.81'	0.83'	E	1.15'	134.33°	0.19°	-0.19°	-16.48°
14	4478.00'	0.20°	228.80°	31.00'	4477.80'	0.75'	0.84'	0.78'	E	1.15'	137.01°	0.65°	0.65°	-57.74°
15	4508.00'	1.50°	222.50°	30.00'	4507.80'	1.11'	1.17'	0.48'	E	1.26'	157.61°	4.34°	4.33°	-21.00°
16	4538.00'	3.30°	226.80°	30.00'	4537.77'	2.08'	2.05'	0.41'	W	2.09'	191.45°	6.03°	6.00°	14.33°
17	4568.00'	6.10°	227.30°	30.00'	4567.67'	3.94'	3.72'	2.22'	W	4.33'	210.78°	9.33°	9.33°	1.67°
18	4599.00'	8.30°	228.60°	31.00'	4598.42'	6.83'	6.32'	5.10'	W	8.12'	218.95°	7.12°	7.10°	4.19°
19	4629.00'	10.50°	229.40°	30.00'	4628.02'	10.42'	9.53'	8.81'	W	12.97'	222.74°	7.35°	7.33°	2.67°
20	4660.00'	13.00°	229.00°	31.00'	4658.36'	15.03'	13.65'	13.58'	W	19.26'	224.85°	8.07°	8.06°	-1.29°
21	4690.00'	15.30°	229.70°	30.00'	4687.45'	20.38'	18.43'	19.15'	W	26.58'	226.10°	7.69°	7.67°	2.33°
22	4721.00'	17.80°	229.80°	31.00'	4717.17'	26.77'	24.13'	25.89'	W	35.39'	227.01°	8.07°	8.06°	0.32°
23	4751.00'	19.60°	230.20°	30.00'	4745.58'	33.71'	30.31'	33.26'	W	45.00'	227.65°	6.02°	6.00°	1.33°
24	4782.00'	19.70°	230.10°	31.00'	4774.78'	41.21'	36.99'	41.26'	W	55.42'	228.12°	0.34°	0.32°	-0.32°

25	4812.00'	19.30°	229.30°	30.00'	4803.05'	48.47'	43.47'	S	48.90'	W	65.43'	228.36°	1.60°	-1.33°	-2.67°
26	4842.00'	20.60°	229.80°	30.00'	4831.25'	55.90'	50.11'	S	56.69'	W	75.66'	228.52°	4.37°	4.33°	1.67°
27	4873.00'	23.30°	229.60°	31.00'	4860.00'	64.30'	57.60'	S	65.52'	W	87.24'	228.68°	8.71°	8.71°	-0.65°
28	4903.00'	26.50°	230.40°	30.00'	4887.21'	73.41'	65.72'	S	75.20'	W	99.87'	228.85°	10.73°	10.67°	2.67°
29	4934.00'	28.40°	231.00°	31.00'	4914.72'	83.59'	74.77'	S	86.26'	W	114.15'	229.08°	6.19°	6.13°	1.94°
30	4964.00'	29.80°	230.70°	30.00'	4940.93'	93.96'	83.98'	S	97.57'	W	128.74'	229.28°	4.69°	4.67°	-1.00°
31	4995.00'	31.30°	230.50°	31.00'	4967.63'	105.21'	93.98'	S	109.75'	W	144.49'	229.43°	4.85°	4.84°	-0.65°
32	5025.00'	32.90°	230.50°	30.00'	4993.04'	116.62'	104.12'	S	122.05'	W	160.43'	229.53°	5.33°	5.33°	0.00°
33	5055.00'	34.10°	230.50°	30.00'	5018.06'	128.46'	114.65'	S	134.83'	W	176.98'	229.62°	4.00°	4.00°	0.00°
34	5086.00'	35.80°	230.70°	31.00'	5043.47'	141.14'	125.92'	S	148.55'	W	194.74'	229.71°	5.50°	5.48°	0.65°
35	5116.00'	38.20°	231.00°	30.00'	5067.42'	153.97'	137.32'	S	162.55'	W	212.79'	229.81°	8.02°	8.00°	1.00°
36	5147.00'	41.00°	231.10°	31.00'	5091.31'	167.97'	149.74'	S	177.92'	W	232.54'	229.91°	9.03°	9.03°	0.32°
37	5177.00'	42.70°	231.20°	30.00'	5113.65'	182.12'	162.30'	S	193.50'	W	252.55'	230.01°	5.67°	5.67°	0.33°
38	5208.00'	45.10°	229.90°	31.00'	5135.99'	197.49'	175.96'	S	210.10'	W	274.05'	230.05°	8.27°	7.74°	-4.19°
39	5238.00'	48.30°	229.60°	30.00'	5156.56'	213.30'	190.06'	S	226.76'	W	295.88'	230.03°	10.69°	10.67°	-1.00°
40	5268.00'	51.50°	228.30°	30.00'	5175.88'	230.14'	205.14'	S	244.06'	W	318.82'	229.95°	11.17°	10.67°	-4.33°
41	5299.00'	51.90°	227.80°	31.00'	5195.10'	248.25'	221.40'	S	262.15'	W	343.13'	229.82°	1.81°	1.29°	-1.61°
42	5329.00'	51.70°	227.90°	30.00'	5213.65'	265.86'	237.22'	S	279.63'	W	366.69'	229.69°	0.72°	-0.67°	0.33°
43	5360.00'	52.00°	227.60°	31.00'	5232.80'	284.09'	253.61'	S	297.67'	W	391.06'	229.57°	1.23°	0.97°	-0.97°
44	5390.00'	52.10°	227.20°	30.00'	5251.25'	301.88'	269.62'	S	315.09'	W	414.70'	229.45°	1.10°	0.33°	-1.33°
45	5421.00'	51.90°	228.10°	31.00'	5270.33'	320.17'	286.08'	S	333.14'	W	439.12'	229.35°	2.38°	-0.65°	2.90°
46	5451.00'	51.70°	227.60°	30.00'	5288.88'	337.78'	301.90'	S	350.62'	W	462.68'	229.27°	1.47°	-0.67°	-1.67°
47	5482.00'	51.80°	223.10°	31.00'	5308.08'	356.64'	319.00'	S	367.93'	W	486.96'	229.07°	11.40°	0.32°	-14.52°
48	5512.00'	52.70°	218.80°	30.00'	5326.45'	376.12'	336.91'	S	383.47'	W	510.45'	228.70°	11.72°	3.00°	-14.33°
49	5543.00'	53.80°	215.20°	31.00'	5345.01'	397.44'	356.75'	S	398.40'	W	534.79'	228.16°	9.96°	3.55°	-11.61°
50	5573.00'	56.00°	211.90°	30.00'	5362.26'	419.23'	377.20'	S	411.96'	W	558.56'	227.52°	11.61°	7.33°	-11.00°
51	5603.00'	58.60°	209.20°	30.00'	5378.47'	442.22'	398.94'	S	424.78'	W	582.75'	226.80°	11.51°	8.67°	-9.00°
52	5634.00'	61.10°	207.30°	31.00'	5394.04'	467.06'	422.56'	S	437.46'	W	608.21'	225.99°	9.65°	8.06°	-6.13°
53	5664.00'	63.60°	206.30°	30.00'	5407.96'	491.92'	446.27'	S	449.44'	W	633.37'	225.20°	8.84°	8.33°	-3.33°
54	5695.00'	66.20°	203.00°	31.00'	5421.11'	518.54'	471.78'	S	461.14'	W	659.72'	224.35°	12.78°	8.39°	-10.65°
55	5725.00'	68.60°	200.80°	30.00'	5432.64'	545.20'	497.48'	S	471.46'	W	685.39'	223.46°	10.48°	8.00°	-7.33°
56	5756.00'	70.50°	199.10°	31.00'	5443.47'	573.41'	524.78'	S	481.37'	W	712.12'	222.53°	8.00°	6.13°	-5.48°
57	5786.00'	72.00°	197.20°	30.00'	5453.11'	601.19'	551.77'	S	490.21'	W	738.08'	221.62°	7.81°	5.00°	-6.33°
58	5816.00'	73.40°	195.20°	30.00'	5462.04'	629.39'	579.28'	S	498.20'	W	764.05'	220.70°	7.89°	4.67°	-6.67°
59	5847.00'	74.60°	193.70°	31.00'	5470.58'	658.88'	608.13'	S	505.64'	W	790.88'	219.74°	6.05°	3.87°	-4.84°
60	5877.00'	76.00°	192.00°	30.00'	5478.19'	687.70'	636.42'	S	512.09'	W	816.87'	218.82°	7.20°	4.67°	-5.67°

61	5908.00'	76.90°	190.50°	31.00'	5485.46'	717.72'	665.98'	S	517.97'	W	843.69'	217.87°	5.53°	2.90°	-4.84°
62	5938.00'	78.30°	189.40°	30.00'	5491.90'	746.95'	694.84'	S	523.03'	W	869.69'	216.97°	5.88°	4.67°	-3.67°
63	5969.00'	79.60°	188.40°	31.00'	5497.84'	777.34'	724.90'	S	527.74'	W	896.65'	216.06°	5.25°	4.19°	-3.23°
64	5999.00'	81.30°	186.50°	30.00'	5502.82'	806.91'	754.23'	S	531.57'	W	922.73'	215.18°	8.43°	5.67°	-6.33°
65	6025.00'	82.90°	184.70°	26.00'	5506.39'	832.66'	779.86'	S	534.08'	W	945.21'	214.41°	9.21°	6.15°	-6.92°
66	6103.00'	86.80°	181.90°	78.00'	5513.39'	910.23'	857.39'	S	538.55'	W	1012.50'	212.13°	6.15°	5.00°	-3.59°
67	6135.00'	86.80°	181.80°	32.00'	5515.18'	942.09'	889.32'	S	539.58'	W	1040.21'	211.25°	0.31°	0.00°	-0.31°
68	6166.00'	88.50°	181.70°	31.00'	5516.45'	972.97'	920.28'	S	540.52'	W	1067.28'	210.43°	5.49°	5.48°	-0.32°
69	6197.00'	90.30°	181.10°	31.00'	5516.78'	1003.86'	951.27'	S	541.28'	W	1094.49'	209.64°	6.12°	5.81°	-1.94°
70	6228.00'	90.50°	180.60°	31.00'	5516.56'	1034.73'	982.27'	S	541.74'	W	1121.75'	208.88°	1.74°	0.65°	-1.61°
71	6258.00'	90.80°	180.70°	30.00'	5516.22'	1064.59'	1012.26'	S	542.08'	W	1148.27'	208.17°	1.05°	1.00°	0.33°
72	6288.00'	90.90°	180.30°	30.00'	5515.77'	1094.44'	1042.26'	S	542.34'	W	1174.92'	207.49°	1.37°	0.33°	-1.33°
73	6379.00'	90.50°	180.40°	91.00'	5514.66'	1184.96'	1133.25'	S	542.90'	W	1256.58'	205.60°	0.45°	-0.44°	0.11°
74	6470.00'	90.30°	180.00°	91.00'	5514.03'	1275.47'	1224.25'	S	543.22'	W	1339.35'	203.93°	0.49°	-0.22°	-0.44°
75	6560.00'	90.70°	180.40°	90.00'	5513.24'	1364.98'	1314.24'	S	543.53'	W	1422.20'	202.47°	0.63°	0.44°	0.44°
76	6652.00'	91.10°	179.90°	92.00'	5511.80'	1456.46'	1406.23'	S	543.77'	W	1507.70'	201.14°	0.70°	0.43°	-0.54°
77	6742.00'	88.70°	179.70°	90.00'	5511.95'	1545.90'	1496.22'	S	543.46'	W	1591.86'	199.96°	2.68°	-2.67°	-0.22°
78	6834.00'	89.00°	179.30°	92.00'	5513.80'	1637.26'	1588.20'	S	542.65'	W	1678.35'	198.86°	0.54°	0.33°	-0.43°
79	6925.00'	89.80°	178.70°	91.00'	5514.75'	1727.54'	1679.18'	S	541.07'	W	1764.20'	197.86°	1.10°	0.88°	-0.66°
80	7017.00'	90.90°	178.70°	92.00'	5514.19'	1818.76'	1771.15'	S	538.98'	W	1851.35'	196.93°	1.20°	1.20°	0.00°
81	7107.00'	89.30°	179.10°	90.00'	5514.03'	1908.04'	1861.13'	S	537.25'	W	1937.13'	196.10°	1.83°	-1.78°	0.44°
82	7199.00'	89.50°	179.00°	92.00'	5515.00'	1999.33'	1953.12'	S	535.73'	W	2025.26'	195.34°	0.24°	0.22°	-0.11°
83	7289.00'	89.40°	178.90°	90.00'	5515.86'	2088.61'	2043.10'	S	534.08'	W	2111.75'	194.65°	0.16°	-0.11°	-0.11°
84	7381.00'	90.00°	179.00°	92.00'	5516.34'	2179.88'	2135.08'	S	532.39'	W	2200.46'	194.00°	0.66°	0.65°	0.11°
85	7472.00'	89.70°	179.90°	91.00'	5516.58'	2270.26'	2226.07'	S	531.52'	W	2288.65'	193.43°	1.04°	-0.33°	0.99°
86	7564.00'	89.80°	180.40°	92.00'	5516.98'	2361.75'	2318.07'	S	531.76'	W	2378.28'	192.92°	0.55°	0.11°	0.54°
87	7658.00'	89.30°	180.00°	94.00'	5517.72'	2455.24'	2412.07'	S	532.09'	W	2470.06'	192.44°	0.68°	-0.53°	-0.43°
88	7753.00'	90.60°	180.30°	95.00'	5517.80'	2549.71'	2507.07'	S	532.34'	W	2562.96'	191.99°	1.40°	1.37°	0.32°
89	7847.00'	90.00°	181.10°	94.00'	5517.31'	2643.28'	2601.06'	S	533.48'	W	2655.20'	191.59°	1.06°	-0.64°	0.85°
90	7942.00'	90.40°	181.00°	95.00'	5516.98'	2737.91'	2696.04'	S	535.22'	W	2748.65'	191.23°	0.43°	0.42°	-0.11°
91	8036.00'	90.50°	180.50°	94.00'	5516.24'	2831.48'	2790.03'	S	536.45'	W	2841.13'	190.88°	0.54°	0.11°	-0.53°
92	8130.00'	89.90°	180.70°	94.00'	5515.91'	2925.04'	2884.02'	S	537.44'	W	2933.67'	190.56°	0.67°	-0.64°	0.21°
93	8225.00'	90.00°	180.80°	95.00'	5516.00'	3019.62'	2979.01'	S	538.68'	W	3027.33'	190.25°	0.15°	0.11°	0.11°
94	8319.00'	90.50°	180.60°	94.00'	5515.59'	3113.19'	3073.01'	S	539.83'	W	3120.06'	189.96°	0.57°	0.53°	-0.21°
95	8414.00'	90.70°	180.40°	95.00'	5514.59'	3207.72'	3168.00'	S	540.66'	W	3213.80'	189.68°	0.30°	0.21°	-0.21°
96	8508.00'	88.70°	181.40°	94.00'	5515.08'	3301.32'	3261.98'	S	542.14'	W	3306.72'	189.44°	2.38°	-2.13°	1.06°

97	8602.00'	88.60°	181.10°	94.00'	5517.30'	3394.95'	3355.93' S	544.19' W	3399.76'	189.21°	0.34°	-0.11°	-0.32°
98	8697.00'	89.00°	180.60°	95.00'	5519.29'	3489.52'	3450.90' S	545.60' W	3493.76'	188.98°	0.67°	0.42°	-0.53°
99	8791.00'	89.30°	181.10°	94.00'	5520.68'	3583.10'	3544.88' S	546.99' W	3586.83'	188.77°	0.62°	0.32°	0.53°
100	8885.00'	89.20°	180.80°	94.00'	5521.91'	3676.71'	3638.86' S	548.55' W	3679.97'	188.57°	0.34°	-0.11°	-0.32°
101	8980.00'	89.80°	180.90°	95.00'	5522.74'	3771.30'	3733.84' S	549.96' W	3774.13'	188.38°	0.64°	0.63°	0.11°
102	9074.00'	90.00°	181.10°	94.00'	5522.91'	3864.91'	3827.83' S	551.60' W	3867.37'	188.20°	0.30°	0.21°	0.21°
103	9169.00'	91.40°	180.20°	95.00'	5521.74'	3959.46'	3922.81' S	552.68' W	3961.55'	188.02°	1.75°	1.47°	-0.95°
104	9263.00'	88.70°	180.60°	94.00'	5521.66'	4052.98'	4016.80' S	553.33' W	4054.73'	187.84°	2.90°	-2.87°	0.43°
105	9357.00'	88.70°	180.60°	94.00'	5523.80'	4146.52'	4110.77' S	554.32' W	4147.97'	187.68°	0.00°	0.00°	0.00°
106	9452.00'	89.40°	180.60°	95.00'	5525.37'	4241.05'	4205.75' S	555.31' W	4242.25'	187.52°	0.74°	0.74°	0.00°
107	9546.00'	90.20°	180.70°	94.00'	5525.70'	4334.62'	4299.74' S	556.38' W	4335.59'	187.37°	0.86°	0.85°	0.11°
108	9641.00'	91.10°	181.00°	95.00'	5524.62'	4429.20'	4394.73' S	557.79' W	4429.98'	187.23°	1.00°	0.95°	0.32°
109	9735.00'	90.10°	179.40°	94.00'	5523.64'	4522.69'	4488.72' S	558.11' W	4523.28'	187.09°	2.01°	-1.06°	-1.70°
110	9830.00'	90.50°	179.00°	95.00'	5523.14'	4616.98'	4583.70' S	556.79' W	4617.40'	186.93°	0.60°	0.42°	-0.42°
111	9925.00'	90.90°	179.10°	95.00'	5521.98'	4711.25'	4678.68' S	555.21' W	4711.51'	186.77°	0.43°	0.42°	0.11°
112	10019.00'	91.00°	178.70°	94.00'	5520.42'	4804.48'	4772.65' S	553.41' W	4804.63'	186.61°	0.44°	0.11°	-0.43°
113	10113.00'	90.50°	178.90°	94.00'	5519.19'	4897.70'	4866.62' S	551.44' W	4897.77'	186.46°	0.57°	-0.53°	0.21°
114	10208.00'	90.80°	179.40°	95.00'	5518.11'	4991.98'	4961.61' S	550.03' W	4992.00'	186.33°	0.61°	0.32°	0.53°
115	10304.00'	91.10°	179.30°	96.00'	5516.52'	5087.29'	5057.59' S	548.94' W	5087.29'	186.19°	0.33°	0.31°	-0.10°
PTB	10356.00'	91.10°	179.30°	52.00'	5515.52'	5138.91'	5109.57' S	548.31' W	5138.91'	186.12°	0.00°	0.00°	0.00°