



Lillian 3206 2-31H

SandRidge

Lariat 39

Harper Co, Kansas

Minimum Curvature Calculation

MWD Matt Stanaland / Kyle Harri

DIRECTIONAL DRILLERS: Doug Bennett / Brandon Cr

Magnetic Declination: 4.54

Job #: DR1210165

Vertical Section Azimuth 357.31

No.	Survey Depth	INC	AZM	TVD	N-S	E-W	Vertical Section	DLS/ 100	BUR	WR
Tie	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00
1	933	2.50	278.70	932.70	3.08	-20.12	4.02	0.27	0.27	8.71
2	1395	1.60	256.30	1394.41	3.07	-36.34	4.78	0.26	-0.19	-4.85
3	1870	0.90	290.10	1869.30	2.79	-46.29	4.96	0.21	-0.15	7.12
4	2345	0.40	270.20	2344.27	4.07	-51.45	6.48	0.11	-0.11	-4.19
5	2820	0.50	315.90	2819.26	5.57	-54.55	8.12	0.08	0.02	9.62
6	3295	0.30	335.00	3294.24	8.18	-56.52	10.83	0.05	-0.04	4.02
7	3580	0.30	154.40	3579.24	8.19	-56.51	10.83	0.21	0.00	-62.95
8	3611	0.30	112.00	3610.24	8.08	-56.40	10.72	0.70	0.00	-136.77
9	3642	1.20	26.80	3641.24	8.34	-56.18	10.97	3.91	2.90	-274.84
10	3674	3.80	20.10	3673.21	9.64	-55.67	12.24	8.16	8.13	-20.94
11	3706	6.50	15.70	3705.07	12.38	-54.81	14.94	8.52	8.44	-13.75
12	3737	9.10	12.70	3735.79	16.46	-53.80	18.97	8.49	8.39	-9.68
13	3769	11.20	12.60	3767.28	21.96	-52.56	24.40	6.56	6.56	-0.31
14	3801	13.00	12.10	3798.57	28.51	-51.13	30.88	5.63	5.63	-1.56
15	3832	14.70	22.10	3828.67	35.57	-48.92	37.83	9.45	5.48	32.26
16	3864	16.40	9.00	3859.51	43.80	-46.68	45.94	12.16	5.31	-40.94
17	3896	18.00	7.60	3890.08	53.16	-45.32	55.23	5.16	5.00	-4.38
18	3927	19.80	6.80	3919.41	63.12	-44.07	65.12	5.87	5.81	-2.58
19	3959	22.30	6.70	3949.27	74.53	-42.72	76.46	7.81	7.81	-0.31
20	3991	24.50	6.80	3978.63	87.15	-41.22	88.99	6.88	6.88	0.31
21	4022	27.40	6.80	4006.51	100.62	-39.62	102.37	9.35	9.35	0.00
22	4054	30.00	7.90	4034.57	115.86	-37.65	117.50	8.29	8.13	3.44
23	4086	31.80	9.30	4062.03	132.11	-35.18	133.61	6.06	5.63	4.38
24	4117	34.20	9.00	4088.03	148.78	-32.50	150.14	7.76	7.74	-0.97
25	4149	36.30	6.40	4114.16	167.07	-30.04	168.30	8.06	6.56	-8.13
26	4181	38.40	5.30	4139.60	186.39	-28.06	187.50	6.89	6.56	-3.44
27	4212	40.20	4.60	4163.58	205.95	-26.37	206.96	5.98	5.81	-2.26
28	4244	41.80	2.60	4187.73	226.90	-25.06	227.82	6.47	5.00	-6.25
29	4276	43.70	2.00	4211.23	248.60	-24.19	249.46	6.07	5.94	-1.88
30	4307	45.30	1.70	4233.34	270.32	-23.49	271.12	5.21	5.16	-0.97
31	4371	49.90	1.00	4276.49	317.55	-22.39	318.25	7.23	7.19	-1.09
32	4434	50.10	0.10	4316.98	365.81	-21.92	366.43	1.14	0.32	-1.43
33	4466	49.50	359.30	4337.64	390.25	-22.05	390.85	2.68	-1.88	2.50
34	4497	49.20	359.30	4357.83	413.77	-22.34	414.36	0.97	-0.97	0.00
35	4529	48.40	359.40	4378.91	437.84	-22.61	438.42	2.51	-2.50	0.31
36	4561	48.70	359.20	4400.09	461.83	-22.90	462.39	1.05	0.94	-0.62
37	4592	51.20	359.00	4420.04	485.55	-23.28	486.11	8.08	8.06	-0.65
38	4624	54.30	358.80	4439.41	511.01	-23.77	511.57	9.70	9.69	-0.62



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39	4656	56.80	358.70	4457.51	537.39	-24.34	537.94	7.82	7.81	-0.31
40	4687	59.50	359.20	4473.86	563.72	-24.82	564.26	8.82	8.71	1.61
41	4719	62.70	359.20	4489.33	591.73	-25.22	592.26	10.00	10.00	0.00
42	4750	65.90	359.30	4502.77	619.66	-25.58	620.17	10.33	10.32	0.32
43	4782	70.00	358.90	4514.78	649.30	-26.05	649.81	12.86	12.81	-1.25
44	4814	73.70	357.80	4524.74	679.69	-26.93	680.21	12.01	11.56	-3.44
45	4845	77.20	356.40	4532.53	709.66	-28.45	710.21	12.11	11.29	-4.52
46	4877	81.60	355.90	4538.42	741.03	-30.56	741.65	13.84	13.75	-1.56
47	4909	85.80	355.90	4541.93	772.75	-32.83	773.44	13.13	13.13	0.00
48	4935	89.20	356.20	4543.06	798.66	-34.62	799.40	13.13	13.08	1.15
49	4960	90.50	356.10	4543.13	823.60	-36.30	824.40	5.22	5.20	-0.40
50	5028	91.40	356.80	4542.00	891.46	-40.51	892.38	1.68	1.32	1.03
51	5058	91.20	356.80	4541.32	921.41	-42.19	922.37	0.67	-0.67	0.00
52	5150	92.40	357.50	4538.43	1013.24	-46.76	1014.32	1.51	1.30	0.76
53	5242	91.90	357.10	4534.98	1105.08	-51.09	1106.26	0.70	-0.54	-0.43
54	5334	91.70	356.80	4532.09	1196.90	-55.98	1198.21	0.39	-0.22	-0.33
55	5426	91.50	356.90	4529.52	1288.73	-61.03	1290.17	0.24	-0.22	0.11
56	5518	91.20	356.20	4527.35	1380.53	-66.57	1382.14	0.83	-0.33	-0.76
57	5610	90.60	355.70	4525.91	1472.29	-73.07	1474.10	0.85	-0.65	-0.54
58	5702	91.40	357.10	4524.30	1564.09	-78.84	1566.07	1.75	0.87	1.52
59	5797	90.60	359.00	4522.64	1659.02	-82.07	1661.04	2.17	-0.84	2.00
60	5891	90.60	0.20	4521.66	1753.01	-82.73	1754.96	1.28	0.00	-1.28
61	5986	90.20	0.70	4521.00	1848.00	-81.98	1849.82	0.67	-0.42	0.53
62	6081	90.60	1.50	4520.33	1942.98	-80.16	1944.60	0.94	0.42	0.84
63	6176	92.60	359.70	4517.68	2037.93	-79.16	2039.40	2.83	2.11	1.89
64	6271	92.10	355.40	4513.78	2132.74	-83.22	2134.30	4.55	-0.53	-4.53
65	6366	91.10	353.40	4511.13	2227.25	-92.49	2229.13	2.35	-1.05	-2.11
66	6461	90.10	354.70	4510.13	2321.73	-102.34	2323.97	1.73	-1.05	1.37
67	6556	89.20	354.50	4510.71	2416.30	-111.28	2418.86	0.97	-0.95	-0.21
68	6651	89.20	354.10	4512.04	2510.82	-120.71	2513.72	0.42	0.00	-0.42
69	6746	90.50	354.60	4512.29	2605.36	-130.06	2608.59	1.47	1.37	0.53
70	6841	91.30	357.40	4510.80	2700.11	-136.69	2703.55	3.06	0.84	2.95
71	6936	91.30	356.80	4508.64	2794.96	-141.49	2798.52	0.63	0.00	-0.63
72	7031	91.00	357.00	4506.74	2889.80	-146.63	2893.50	0.38	-0.32	0.21
73	7126	90.70	356.70	4505.33	2984.65	-151.85	2988.48	0.45	-0.32	-0.32
74	7221	90.60	358.70	4504.25	3079.56	-155.66	3083.47	2.11	-0.11	2.11
75	7316	90.60	358.00	4503.25	3174.51	-158.40	3178.45	0.74	0.00	-0.74
76	7411	90.30	357.30	4502.51	3269.43	-162.29	3273.44	0.80	-0.32	-0.74
77	7506	90.00	357.90	4502.26	3364.35	-166.27	3368.44	0.71	-0.32	0.63



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78	7601	90.30	357.00	4502.01	3459.25	-170.50	3463.44	1.00	0.32	-0.95
79	7696	90.60	357.20	4501.26	3554.13	-175.30	3558.44	0.38	0.32	0.21
80	7791	91.20	357.40	4499.77	3649.01	-179.78	3653.42	0.67	0.63	0.21
81	7886	91.90	357.20	4497.20	3743.87	-184.25	3748.39	0.77	0.74	-0.21
82	7981	92.00	359.60	4493.97	3838.77	-186.90	3843.31	2.53	0.11	2.53
83	8076	91.40	358.40	4491.15	3933.71	-188.56	3938.22	1.41	-0.63	-1.26
84	8171	90.40	357.90	4489.66	4028.65	-191.63	4033.20	1.18	-1.05	-0.53
85	8266	89.60	357.40	4489.66	4123.57	-195.52	4128.20	0.99	-0.84	-0.53
86	8361	91.60	357.30	4488.66	4218.45	-199.91	4223.19	2.11	2.11	-0.11
87	8456	91.60	356.30	4486.01	4313.27	-205.21	4318.15	1.05	0.00	-1.05
88	8551	91.20	356.90	4483.69	4408.07	-210.85	4413.11	0.76	-0.42	0.63
89	8646	90.40	356.20	4482.36	4502.89	-216.56	4508.09	1.12	-0.84	-0.74
90	8741	89.60	356.10	4482.36	4597.67	-222.94	4603.07	0.85	-0.84	-0.11
91	8836	91.10	356.20	4481.78	4692.46	-229.32	4698.05	1.58	1.58	0.11
92	8876	92.20	356.10	4480.63	4732.35	-232.00	4738.02	2.76	2.75	-0.25