



Company: Noble Energy
Lease/Well: Moser/34-5 G
Location: Sec 34, T4N, R65W
Rig Name: Lightning Wire
State/County: Colorado/Weld
Latitude: 40.27



GRID North is 0.55 Degrees East of True North
VS-Azi: 0.00 Degrees

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: moser-01.ut
Minimum Curvature Method
Report Date/Time: 2/18/2013 / 16:31

Vaughn Energy Services
Pinedale, WY
307-367-2691
Surveyor: Troy Stephenson
Moser 34-5 G

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.12	310.12	100.00	0.07	-0.08	0.07	0.10	310.12	0.12
200.00	0.21	311.41	200.00	0.26	-0.30	0.26	0.39	310.72	0.09
300.00	0.15	312.41	300.00	0.46	-0.53	0.46	0.70	311.21	0.06
400.00	0.16	311.21	400.00	0.64	-0.73	0.64	0.97	311.37	0.02
500.00	0.07	311.71	500.00	0.78	-0.88	0.78	1.18	311.36	0.10
600.00	0.11	310.99	600.00	0.88	-1.00	0.88	1.33	311.35	0.04
700.00	0.06	314.08	700.00	0.98	-1.11	0.98	1.47	311.42	0.05
800.00	0.13	270.84	800.00	1.01	-1.26	1.01	1.61	308.81	0.10
900.00	0.07	273.96	900.00	1.02	-1.43	1.02	1.76	305.37	0.07
1000.00	0.06	264.56	1000.00	1.02	-1.55	1.02	1.85	303.33	0.01
1100.00	0.12	253.21	1100.00	0.98	-1.70	0.98	1.96	299.95	0.06
1200.00	0.04	231.47	1200.00	0.93	-1.83	0.93	2.05	296.95	0.09
1300.00	0.21	197.79	1300.00	0.74	-1.91	0.74	2.05	291.16	0.18
1400.00	0.10	179.41	1400.00	0.48	-1.96	0.48	2.02	283.72	0.12
1500.00	0.14	131.22	1500.00	0.31	-1.87	0.31	1.89	279.40	0.11
1600.00	0.19	126.54	1600.00	0.13	-1.64	0.13	1.64	274.40	0.05
1700.00	0.16	101.08	1700.00	0.00	-1.37	0.00	1.37	269.96	0.09
1800.00	0.38	92.25	1799.99	-0.04	-0.90	-0.04	0.90	267.47	0.23
1900.00	0.56	58.88	1899.99	0.20	-0.16	0.20	0.25	321.92	0.32
2000.00	0.73	58.27	1999.99	0.78	0.80	0.78	1.12	45.63	0.17
2100.00	1.10	63.53	2099.97	1.54	2.20	1.54	2.69	54.92	0.38
2200.00	1.48	63.51	2199.95	2.55	4.22	2.55	4.93	58.84	0.38

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
2300.00	1.68	70.18	2299.91	3.63	6.76	3.63	7.67	61.79	0.27
2400.00	1.76	76.04	2399.86	4.49	9.63	4.49	10.62	64.98	0.19
2500.00	1.64	72.61	2499.82	5.29	12.48	5.29	13.56	67.03	0.15
2600.00	1.57	80.17	2599.78	5.95	15.20	5.95	16.33	68.61	0.22
2700.00	1.51	69.49	2699.74	6.65	17.79	6.65	18.99	69.50	0.29
2800.00	1.45	56.53	2799.71	7.81	20.08	7.81	21.55	68.74	0.34
2900.00	1.27	79.24	2899.68	8.72	22.23	8.72	23.88	68.58	0.57
3000.00	1.03	82.14	2999.66	9.05	24.21	9.05	25.84	69.51	0.24
3100.00	0.90	94.91	3099.65	9.10	25.88	9.10	27.43	70.62	0.25
3200.00	0.68	122.21	3199.64	8.72	27.16	8.72	28.52	72.20	0.43
3300.00	1.00	148.07	3299.63	7.66	28.12	7.66	29.15	74.76	0.49
3400.00	1.08	146.81	3399.61	6.13	29.10	6.13	29.74	78.10	0.09
3500.00	0.96	182.03	3499.60	4.50	29.59	4.50	29.93	81.35	0.63
3600.00	1.24	196.98	3599.58	2.63	29.24	2.63	29.36	84.86	0.40
3700.00	1.27	192.87	3699.56	0.51	28.68	0.51	28.68	88.98	0.10
3800.00	1.62	204.33	3799.52	-1.86	27.85	-1.86	27.91	93.82	0.45
3900.00	1.71	211.86	3899.48	-4.41	26.48	-4.41	26.85	99.46	0.24
4000.00	1.67	195.67	3999.44	-7.08	25.30	-7.08	26.27	105.64	0.48
4100.00	1.73	199.61	4099.40	-9.91	24.40	-9.91	26.34	112.10	0.13
4200.00	1.20	211.44	4199.36	-12.22	23.35	-12.22	26.35	117.63	0.61
4300.00	1.17	203.52	4299.34	-14.05	22.40	-14.05	26.44	122.10	0.17
4400.00	1.10	225.11	4399.32	-15.66	21.31	-15.66	26.45	126.31	0.43
4500.00	1.02	214.86	4499.30	-17.06	20.13	-17.06	26.39	130.29	0.20
4600.00	1.10	231.59	4599.29	-18.39	18.87	-18.39	26.35	134.26	0.32
4700.00	1.22	258.86	4699.27	-19.19	17.07	-19.19	25.68	138.35	0.56
4800.00	1.42	278.56	4799.24	-19.21	14.79	-19.21	24.25	142.40	0.49
4900.00	1.32	284.23	4899.21	-18.74	12.45	-18.74	22.50	146.41	0.17
5000.00	1.07	283.58	4999.19	-18.24	10.42	-18.24	21.00	150.26	0.25
5100.00	0.71	276.26	5099.18	-17.95	8.90	-17.95	20.03	153.64	0.38
5200.00	0.74	265.76	5199.17	-17.93	7.64	-17.93	19.49	156.94	0.14
5300.00	0.29	244.00	5299.17	-18.09	6.76	-18.09	19.31	159.50	0.49
5400.00	0.14	229.77	5399.17	-18.28	6.45	-18.28	19.38	160.58	0.16
5500.00	0.15	228.46	5499.17	-18.44	6.25	-18.44	19.48	161.27	0.01
5600.00	0.23	225.51	5599.17	-18.67	6.02	-18.67	19.61	162.14	0.08
5700.00	0.25	224.01	5699.16	-18.96	5.72	-18.96	19.81	163.20	0.02
5800.00	0.25	222.12	5799.16	-19.28	5.43	-19.28	20.03	164.28	0.01
5900.00	0.33	192.67	5899.16	-19.72	5.22	-19.72	20.40	165.18	0.16
6000.00	0.48	188.43	5999.16	-20.42	5.09	-20.42	21.04	165.99	0.16
6100.00	0.45	158.33	6099.16	-21.20	5.18	-21.20	21.83	166.28	0.25
6200.00	0.57	167.45	6199.15	-22.06	5.43	-22.06	22.72	166.16	0.14
6300.00	0.88	169.67	6299.14	-23.30	5.68	-23.30	23.98	166.30	0.31
6400.00	1.17	162.33	6399.13	-25.03	6.13	-25.03	25.77	166.25	0.32

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
6500.00	1.34	169.73	6499.10	-27.15	6.64	-27.15	27.95	166.25	0.23
6600.00	1.62	147.73	6599.07	-29.50	7.61	-29.50	30.46	165.53	0.63
6700.00	1.86	155.84	6699.03	-32.17	9.03	-32.17	33.41	164.32	0.34
6800.00	2.02	145.62	6798.97	-35.10	10.69	-35.10	36.70	163.07	0.38
6900.00	3.06	156.63	6898.87	-39.01	12.74	-39.01	41.04	161.91	1.14
7000.00	3.36	153.48	6998.71	-44.08	15.11	-44.08	46.60	161.08	0.35