



Company: Noble Energy
Lease/Well: Wells Ranch USX AA/35-7
Location: S-35- T-6N R-63W
Rig Name: Production Well
State/County: Colorado/Weld
Latitude: 40.44, Longitude: -104.40
GRID North is 0.71 Degrees East of True North
VS-Azi: 0.00 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : Ground Elevation

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01_ed.ut

Minimum Curvature Method

Report Date/Time: 7/29/2011 / 17:38

Vaughn Energy Services

Henderson, CO

303-853-4976

Surveyor: Daniel Miller

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	0.19	300.53	100.00	0.08	-0.14	0.08	0.16	300.53	0.19
200.00	0.18	314.27	200.00	0.27	-0.39	0.27	0.48	304.96	0.04
300.00	0.04	106.12	300.00	0.37	-0.47	0.37	0.60	308.54	0.22
400.00	0.28	149.77	400.00	0.15	-0.31	0.15	0.35	296.23	0.25
500.00	1.11	97.28	499.99	-0.18	0.77	-0.18	0.79	103.14	0.96
600.00	1.31	99.52	599.97	-0.49	2.85	-0.49	2.89	99.76	0.21
700.00	1.34	102.61	699.94	-0.93	5.12	-0.93	5.20	100.35	0.08
800.00	1.39	105.17	799.91	-1.51	7.43	-1.51	7.58	101.47	0.08
900.00	1.45	108.46	899.88	-2.23	9.81	-2.23	10.06	102.80	0.10
1000.00	1.43	109.56	999.85	-3.05	12.19	-3.05	12.57	104.04	0.03
1100.00	1.44	110.03	1099.82	-3.90	14.55	-3.90	15.07	105.00	0.01
1200.00	1.56	112.01	1199.79	-4.84	17.00	-4.84	17.67	105.89	0.13
1300.00	1.47	112.97	1299.75	-5.85	19.44	-5.85	20.30	106.75	0.09
1400.00	1.52	106.63	1399.72	-6.73	21.89	-6.73	22.90	107.09	0.17
1500.00	1.50	105.23	1499.68	-7.45	24.42	-7.45	25.53	106.97	0.05
1600.00	1.29	103.94	1599.65	-8.07	26.77	-8.07	27.96	106.77	0.21
1700.00	0.77	102.17	1699.64	-8.48	28.52	-8.48	29.76	106.56	0.52
1800.00	0.63	100.60	1799.63	-8.72	29.72	-8.72	30.97	106.36	0.14
1900.00	0.41	106.47	1899.62	-8.93	30.61	-8.93	31.88	106.26	0.23
2000.00	0.18	166.13	1999.62	-9.18	30.99	-9.18	32.32	106.50	0.36
2100.00	0.89	260.18	2099.62	-9.46	30.26	-9.46	31.70	107.36	0.92
2200.00	0.89	263.84	2199.61	-9.67	28.72	-9.67	30.31	108.61	0.06
2300.00	0.69	265.36	2299.60	-9.80	27.36	-9.80	29.06	109.72	0.20
2400.00	0.74	309.27	2399.59	-9.44	26.25	-9.44	27.90	109.78	0.54
2500.00	0.70	313.36	2499.58	-8.61	25.31	-8.61	26.74	108.80	0.07
2600.00	0.66	311.22	2599.58	-7.81	24.43	-7.81	25.65	107.74	0.04
2700.00	0.86	312.78	2699.57	-6.93	23.45	-6.93	24.45	106.46	0.20
2800.00	0.85	310.24	2799.56	-5.94	22.33	-5.94	23.11	104.89	0.04
2900.00	0.80	317.83	2899.54	-4.94	21.29	-4.94	21.86	103.06	0.12
3000.00	0.66	315.01	2999.54	-4.02	20.42	-4.02	20.81	101.13	0.14
3100.00	0.63	314.65	3099.53	-3.23	19.62	-3.23	19.89	99.34	0.03
3200.00	0.68	319.97	3199.52	-2.39	18.85	-2.39	19.01	97.22	0.08
3300.00	0.68	324.44	3299.52	-1.45	18.13	-1.45	18.19	94.58	0.05
3400.00	0.91	325.45	3399.51	-0.31	17.33	-0.31	17.33	91.02	0.23

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
3500.00	0.75	326.30	3499.50	0.89	16.51	0.89	16.54	86.92	0.17
3600.00	0.64	324.91	3599.49	1.89	15.83	1.89	15.95	83.20	0.11
3700.00	0.53	337.69	3699.48	2.77	15.34	2.77	15.59	79.76	0.17
3800.00	0.74	336.36	3799.48	3.79	14.90	3.79	15.38	75.74	0.21
3900.00	0.66	338.46	3899.47	4.92	14.43	4.92	15.25	71.19	0.08
4000.00	0.58	327.32	3999.46	5.88	13.95	5.88	15.14	67.15	0.15
4100.00	0.70	315.28	4099.46	6.74	13.24	6.74	14.86	63.02	0.18
4200.00	0.55	287.12	4199.45	7.32	12.35	7.32	14.36	59.36	0.34
4300.00	0.37	264.87	4299.45	7.43	11.58	7.43	13.76	57.30	0.25
4400.00	0.35	206.66	4399.45	7.13	11.12	7.13	13.21	57.33	0.35
4500.00	0.26	111.22	4499.45	6.78	11.20	6.78	13.09	58.81	0.45
4600.00	1.19	114.63	4599.44	6.26	12.35	6.26	13.85	63.11	0.92
4700.00	1.50	120.86	4699.41	5.16	14.42	5.16	15.31	70.31	0.35
4800.00	1.41	136.83	4799.38	3.59	16.39	3.59	16.77	77.64	0.41
4900.00	2.02	150.77	4899.33	1.15	18.09	1.15	18.13	86.36	0.73
5000.00	2.06	150.52	4999.27	-1.95	19.83	-1.95	19.93	95.61	0.04
5100.00	1.49	147.20	5099.22	-4.60	21.42	-4.60	21.91	102.13	0.57
5200.00	1.18	147.03	5199.19	-6.56	22.69	-6.56	23.62	106.14	0.31
5300.00	0.99	139.87	5299.18	-8.09	23.81	-8.09	25.15	108.77	0.23
5400.00	0.74	133.05	5399.16	-9.20	24.84	-9.20	26.49	110.32	0.27
5500.00	0.49	124.79	5499.16	-9.88	25.66	-9.88	27.50	111.06	0.27
5600.00	0.33	121.95	5599.16	-10.28	26.26	-10.28	28.20	111.38	0.15
5700.00	0.33	128.63	5699.15	-10.61	26.73	-10.61	28.76	111.66	0.04
5800.00	0.27	142.12	5799.15	-10.98	27.10	-10.98	29.25	112.06	0.09
5900.00	0.21	157.05	5899.15	-11.34	27.32	-11.34	29.58	112.53	0.09
6000.00	0.05	282.03	5999.15	-11.49	27.35	-11.49	29.67	112.79	0.24
6100.00	0.17	240.30	6099.15	-11.56	27.18	-11.56	29.53	113.04	0.14
6200.00	0.19	208.18	6199.15	-11.77	26.97	-11.77	29.43	113.58	0.10
6300.00	0.17	286.84	6299.15	-11.87	26.75	-11.87	29.27	113.93	0.23
6400.00	0.17	279.53	6399.15	-11.81	26.46	-11.81	28.97	114.04	0.02
6500.00	0.32	209.53	6499.15	-12.02	26.17	-12.02	28.80	114.67	0.31
6600.00	0.24	198.48	6599.15	-12.47	25.97	-12.47	28.81	115.65	0.09
6700.00	0.06	289.66	6699.15	-12.65	25.85	-12.65	28.78	116.08	0.25
HORIZONTAL DISPLACEMENT IS 28.78 FEET AT 116.08 DEGREES									