

Company: Noble Energy  
 Lease/Well: State A/36-16  
 Location: Sec 36, T6N, R64W  
 Rig Name: Lightning Wire  
 State/County: Colorado/Weld  
 Latitude: 40.44  
 GRID North is 0.65 Degrees East of True North  
 VS-Azi: 0.00 Degrees

**FIELD COPY ONLY (NOT DEFINITIVE)**

Service Company : Vaughn Energy Services

**DRILLOG MS GYRO SURVEY CALCULATIONS**

Filename: statea36-16-01.ut  
 Minimum Curvature Method  
 Report Date/Time: 10/27/2010 / 15:58

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	0.44	349.63	100.00	0.38	-0.07	0.38	0.38	349.63	0.44
200.00	0.40	310.84	200.00	0.98	-0.40	0.98	1.06	337.79	0.28
300.00	0.09	275.62	300.00	1.21	-0.74	1.21	1.42	328.58	0.33
400.00	0.56	277.77	399.99	1.29	-1.31	1.29	1.83	314.57	0.47
500.00	0.86	280.77	499.99	1.49	-2.53	1.49	2.93	300.57	0.30
600.00	0.06	281.77	599.98	1.64	-3.31	1.64	3.69	296.40	0.80
700.00	0.12	198.53	699.98	1.55	-3.39	1.55	3.73	294.55	0.13
800.00	0.10	184.27	799.98	1.36	-3.43	1.36	3.69	291.60	0.04
900.00	0.11	155.36	899.98	1.18	-3.40	1.18	3.60	289.21	0.05
1000.00	0.11	195.36	999.98	1.01	-3.38	1.01	3.53	286.57	0.07
1100.00	0.09	154.10	1099.98	0.85	-3.37	0.85	3.48	284.07	0.07
1200.00	0.10	135.01	1199.98	0.71	-3.28	0.71	3.35	282.27	0.03
1300.00	0.03	82.16	1299.98	0.65	-3.19	0.65	3.26	281.60	0.08
1400.00	0.21	42.46	1399.98	0.79	-3.04	0.79	3.14	284.56	0.18
1500.00	0.20	26.59	1499.98	1.08	-2.84	1.08	3.04	290.83	0.06
1600.00	0.21	350.57	1599.98	1.42	-2.79	1.42	3.13	296.96	0.13
1700.00	0.23	42.61	1699.98	1.75	-2.69	1.75	3.21	302.99	0.19
1800.00	0.12	101.35	1799.98	1.87	-2.46	1.87	3.09	307.29	0.19
1900.00	0.30	157.45	1899.98	1.61	-2.26	1.61	2.77	305.50	0.25
2000.00	0.36	206.55	1999.98	1.09	-2.30	1.09	2.54	295.29	0.28
2100.00	0.69	209.61	2099.97	0.28	-2.74	0.28	2.75	275.87	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
2200.00	0.86	207.78	2199.96	-0.90	-3.39	-0.90	3.50	255.06	0.17
2300.00	1.00	211.61	2299.95	-2.31	-4.19	-2.31	4.79	241.13	0.16
2400.00	0.98	229.16	2399.93	-3.61	-5.30	-3.61	6.41	235.69	0.30
2500.00	0.89	247.37	2499.92	-4.47	-6.66	-4.47	8.02	236.12	0.31
2600.00	0.67	267.90	2599.91	-4.79	-7.96	-4.79	9.29	238.96	0.35
2700.00	0.60	261.72	2699.91	-4.89	-9.07	-4.89	10.30	241.67	0.10
2800.00	0.65	291.29	2799.90	-4.76	-10.12	-4.76	11.18	244.81	0.32
2900.00	0.72	285.80	2899.89	-4.38	-11.25	-4.38	12.08	248.73	0.10
3000.00	0.72	260.39	2999.89	-4.32	-12.48	-4.32	13.21	250.92	0.32
3100.00	0.43	192.32	3099.88	-4.79	-13.18	-4.79	14.03	250.03	0.69
3200.00	0.32	150.77	3199.88	-5.40	-13.13	-5.40	14.20	247.64	0.29
3300.00	1.13	144.35	3299.87	-6.45	-12.42	-6.45	13.99	242.57	0.81
3400.00	1.87	141.01	3399.84	-8.51	-10.82	-8.51	13.77	231.80	0.74
3500.00	2.06	140.29	3499.78	-11.16	-8.64	-11.16	14.12	217.76	0.19
3600.00	2.06	140.16	3599.71	-13.92	-6.35	-13.92	15.30	204.50	0.01
3700.00	2.22	142.41	3699.64	-16.84	-4.01	-16.84	17.31	193.40	0.18
3800.00	2.31	141.81	3799.56	-19.96	-1.58	-19.96	20.02	184.54	0.09
3900.00	1.84	142.85	3899.50	-22.82	0.63	-22.82	22.83	178.42	0.47
4000.00	1.60	157.20	3999.45	-25.38	2.14	-25.38	25.47	175.18	0.49
4100.00	1.58	166.58	4099.42	-28.01	3.00	-28.01	28.17	173.89	0.26
4200.00	1.39	165.80	4199.38	-30.52	3.61	-30.52	30.74	173.25	0.19
4300.00	1.14	176.39	4299.36	-32.69	3.98	-32.69	32.93	173.07	0.34
4400.00	1.00	208.27	4399.34	-34.45	3.63	-34.45	34.64	173.99	0.60
4500.00	1.01	226.98	4499.33	-35.81	2.57	-35.81	35.91	175.89	0.33
4600.00	1.12	222.70	4599.31	-37.13	1.27	-37.13	37.15	178.05	0.14
4700.00	1.12	231.58	4699.29	-38.46	-0.16	-38.46	38.46	180.24	0.17
4800.00	1.08	253.64	4799.27	-39.33	-1.84	-39.33	39.37	182.67	0.42
4900.00	1.26	243.07	4899.25	-40.10	-3.72	-40.10	40.27	185.31	0.28
5000.00	0.79	230.65	4999.24	-41.03	-5.24	-41.03	41.36	187.27	0.51
5100.00	0.93	262.18	5099.22	-41.58	-6.57	-41.58	42.10	188.98	0.48
5200.00	1.02	285.19	5199.21	-41.46	-8.23	-41.46	42.27	191.23	0.40
5300.00	0.77	259.60	5299.20	-41.35	-9.75	-41.35	42.48	193.27	0.46
5400.00	0.36	228.81	5399.19	-41.68	-10.65	-41.68	43.02	194.33	0.50
5500.00	0.28	217.93	5499.19	-42.08	-11.04	-42.08	43.50	194.70	0.10
5600.00	0.77	221.56	5599.19	-42.77	-11.63	-42.77	44.33	195.21	0.49
5700.00	1.69	210.99	5699.16	-44.54	-12.83	-44.54	46.35	196.08	0.94
5800.00	1.25	226.30	5799.13	-46.55	-14.38	-46.55	48.72	197.17	0.58

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
5900.00	1.19	255.32	5899.11	-47.57	-16.17	-47.57	50.24	198.78	0.61
6000.00	0.80	292.89	5999.10	-47.56	-17.81	-47.56	50.79	200.53	0.74
6100.00	0.60	304.25	6099.09	-47.00	-18.88	-47.00	50.65	201.89	0.24
6200.00	0.56	10.85	6199.08	-46.22	-19.22	-46.22	50.06	202.58	0.64
6300.00	0.49	44.22	6299.08	-45.43	-18.83	-45.43	49.18	202.52	0.31
6400.00	0.26	42.49	6399.08	-44.95	-18.38	-44.95	48.57	202.24	0.23
6500.00	0.12	76.53	6499.08	-44.76	-18.12	-44.76	48.29	202.04	0.17
6600.00	0.33	133.19	6599.08	-44.94	-17.80	-44.94	48.34	201.61	0.29
6700.00	0.18	155.87	6699.08	-45.28	-17.53	-45.28	48.56	201.16	0.18
6740.00	0.37	195.89	6739.07	-45.46	-17.54	-45.46	48.73	201.09	0.64
<div> <div>HORIZONTAL DISPLACEMENT IS 48.73 FEET AT 201.09 DEGREES</div> </div>									