

**VES**

VAUGHN ENERGY SERVICES

Company: Noble Energy  
 Lease/Well: State Schmidt / 36-5  
 Location: S-36 T-5N R-65W  
 Rig Name: Production  
 State/County: Colorado/ Weld County  
 Latitude: 40.35, Longitude: -104.61  
 GRID North is 0.58 Degrees East of True North  
 VS-Azi: 0.00 Degrees

**GTI**

GYRO TECHNOLOGIES, INC

## FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB = Ground Level

## DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: inrun\_ed.ut

Minimum Curvature Method

Report Date/Time: 3/21/2011 / 12:42

Vaughn Energy Services  
 Denver, CO  
 720-215-1841  
 Robert Davis

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	0.21	142.20	100.00	-0.14	0.11	-0.14	0.18	142.20	0.21
200.00	0.34	216.95	200.00	-0.52	0.04	-0.52	0.52	175.14	0.34
300.00	0.46	185.61	300.00	-1.15	-0.17	-1.15	1.16	188.47	0.24
400.00	0.20	195.02	399.99	-1.71	-0.26	-1.71	1.73	188.47	0.26
500.00	0.30	136.00	499.99	-2.07	-0.12	-2.07	2.08	183.22	0.26
600.00	0.56	143.70	599.99	-2.65	0.36	-2.65	2.68	172.38	0.26
700.00	0.50	164.28	699.99	-3.47	0.76	-3.47	3.55	167.62	0.20
800.00	0.36	196.22	799.98	-4.18	0.79	-4.18	4.26	169.28	0.27
900.00	0.20	139.95	899.98	-4.62	0.82	-4.62	4.69	169.96	0.30
1000.00	0.18	320.79	999.98	-4.63	0.83	-4.63	4.70	169.82	0.38
1100.00	0.14	202.47	1099.98	-4.62	0.69	-4.62	4.67	171.55	0.27
1200.00	0.08	65.22	1199.98	-4.70	0.71	-4.70	4.75	171.46	0.21
1300.00	0.57	333.40	1299.98	-4.23	0.55	-4.23	4.26	172.60	0.58
1400.00	0.63	306.96	1399.98	-3.45	-0.12	-3.45	3.45	181.92	0.28
1500.00	0.63	333.60	1499.97	-2.62	-0.80	-2.62	2.74	197.03	0.29
1600.00	0.66	312.50	1599.96	-1.74	-1.47	-1.74	2.28	220.26	0.24
1700.00	0.51	289.17	1699.96	-1.21	-2.32	-1.21	2.61	242.50	0.28
1800.00	0.74	329.39	1799.95	-0.50	-3.06	-0.50	3.11	260.70	0.48
1900.00	0.98	346.20	1899.94	0.89	-3.60	0.89	3.71	283.90	0.35
2000.00	1.00	349.84	1999.93	2.58	-3.96	2.58	4.73	303.10	0.06
2100.00	1.18	349.96	2099.91	4.45	-4.29	4.45	6.18	316.04	0.18
2200.00	1.04	353.38	2199.89	6.36	-4.57	6.36	7.83	324.27	0.16
2300.00	1.27	334.79	2299.87	8.26	-5.15	8.26	9.73	328.05	0.44
2400.00	1.60	330.31	2399.84	10.47	-6.31	10.47	12.23	328.92	0.35
2500.00	1.87	331.59	2499.79	13.12	-7.78	13.12	15.26	329.33	0.27
2600.00	2.23	326.16	2599.73	16.17	-9.64	16.17	18.83	329.20	0.41
2700.00	2.28	326.59	2699.65	19.45	-11.82	19.45	22.76	328.71	0.06
2800.00	2.35	328.14	2799.57	22.86	-14.00	22.86	26.80	328.51	0.09
2900.00	2.29	341.24	2899.49	26.48	-15.72	26.48	30.80	329.30	0.53
3000.00	1.57	353.45	2999.43	29.73	-16.52	29.73	34.01	330.94	0.83
3100.00	1.25	351.28	3099.40	32.16	-16.84	32.16	36.30	332.36	0.32
3200.00	0.63	352.90	3199.39	33.78	-17.07	33.78	37.85	333.19	0.61
3300.00	0.61	358.87	3299.38	34.86	-17.15	34.86	38.85	333.80	0.07
3400.00	0.65	355.47	3399.38	35.95	-17.21	35.95	39.86	334.42	0.06

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	0.44	64.96	3499.37	36.68	-16.90	36.68	40.39	335.26	0.65
3600.00	0.50	137.19	3599.37	36.52	-16.25	36.52	39.98	336.01	0.56
3700.00	1.26	142.13	3699.36	35.34	-15.28	35.34	38.50	336.62	0.76
3800.00	1.37	164.55	3799.33	33.32	-14.29	33.32	36.25	336.79	0.52
3900.00	1.37	174.59	3899.30	30.98	-13.86	30.98	33.94	335.90	0.24
4000.00	0.99	144.48	3999.28	29.09	-13.24	29.09	31.97	335.52	0.71
4100.00	0.89	193.99	4099.27	27.64	-12.93	27.64	30.51	334.92	0.79
4200.00	0.46	201.26	4199.26	26.51	-13.27	26.51	29.64	333.42	0.44
4300.00	0.60	202.18	4299.26	25.66	-13.61	25.66	29.04	332.06	0.14
4400.00	0.39	246.18	4399.26	25.04	-14.11	25.04	28.74	330.60	0.42
4500.00	0.24	258.08	4499.25	24.86	-14.62	24.86	28.84	329.54	0.16
4600.00	0.56	212.39	4599.25	24.40	-15.09	24.40	28.69	328.27	0.43
4700.00	0.47	213.17	4699.25	23.65	-15.57	23.65	28.31	326.64	0.10
4800.00	0.42	22.95	4799.25	23.65	-15.65	23.65	28.36	326.50	0.88
4900.00	1.17	27.95	4899.24	24.89	-15.03	24.89	29.07	328.87	0.76
5000.00	1.22	47.45	4999.22	26.51	-13.76	26.51	29.87	332.57	0.41
5100.00	0.97	32.95	5099.20	27.95	-12.52	27.95	30.62	335.87	0.37
5200.00	0.77	6.00	5199.19	29.33	-11.98	29.33	31.68	337.77	0.45
5300.00	0.65	1.28	5299.18	30.56	-11.90	30.56	32.79	338.72	0.14
5400.00	0.66	350.04	5399.17	31.68	-11.99	31.68	33.87	339.28	0.13
5500.00	0.95	307.18	5499.16	32.75	-12.74	32.75	35.14	338.73	0.64
5600.00	1.51	304.15	5599.14	33.98	-14.49	33.98	36.94	336.90	0.57
5700.00	1.34	283.85	5699.11	35.00	-16.72	35.00	38.79	334.47	0.53
5800.00	1.60	298.47	5799.08	35.95	-19.08	35.95	40.70	332.04	0.46
5900.00	1.75	314.44	5899.03	37.69	-21.40	37.69	43.34	330.41	0.49
6000.00	1.72	318.84	5998.99	39.89	-23.48	39.89	46.29	329.51	0.14
6100.00	1.87	324.01	6098.94	42.34	-25.43	42.34	49.39	329.01	0.22
6200.00	1.62	336.46	6198.89	44.95	-26.95	44.95	52.41	329.05	0.45
6300.00	1.26	343.35	6298.86	47.30	-27.83	47.30	54.89	329.53	0.40
6400.00	0.71	318.68	6398.85	48.82	-28.56	48.82	56.56	329.68	0.68
6500.00	0.59	318.79	6498.84	49.67	-29.30	49.67	57.67	329.46	0.12
6600.00	0.65	320.61	6598.83	50.49	-30.00	50.49	58.73	329.28	0.07
6700.00	1.46	317.00	6698.82	51.87	-31.23	51.87	60.54	328.95	0.81
6800.00	1.76	331.19	6798.78	54.14	-32.84	54.14	63.32	328.76	0.49
6900.00	1.35	337.05	6898.74	56.57	-34.04	56.57	66.02	328.97	0.44

<div> HORIZONTAL DISPLACEMENT IS  66.02 FEET AT 328.97 DEGREES </div>
---