

**VES**

VAUGHN ENERGY SERVICES

Company: Noble Energy  
 Lease/Well: UNI-UPRR / 25-4  
 Location: S-25 T-4N R-64W

Rig Name: Production  
 State/County: Colorado / Weld County

Latitude: 40.29, Longitude: -104.51  
 GRID North is 0.64 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: 2/23/2011 / 04:32

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	0.15	95.78	100.00	-0.01	0.13	-0.01	0.13	95.78	0.15
200.00	0.45	133.87	200.00	-0.30	0.54	-0.30	0.62	118.64	0.34
300.00	0.54	146.05	299.99	-0.96	1.09	-0.96	1.45	131.40	0.14
400.00	0.66	123.27	399.99	-1.66	1.83	-1.66	2.47	132.29	0.26
500.00	0.73	140.89	499.98	-2.47	2.71	-2.47	3.67	132.37	0.22
600.00	0.67	146.18	599.97	-3.45	3.44	-3.45	4.87	135.13	0.09
700.00	0.63	146.88	699.97	-4.40	4.06	-4.40	5.99	137.27	0.04
800.00	0.78	149.27	799.96	-5.44	4.71	-5.44	7.20	139.12	0.15
900.00	0.72	153.55	899.95	-6.59	5.34	-6.59	8.48	140.99	0.08
1000.00	0.76	154.81	999.94	-7.76	5.90	-7.76	9.75	142.73	0.05
1100.00	0.74	157.32	1099.94	-8.96	6.44	-8.96	11.03	144.30	0.04
1200.00	0.81	147.49	1199.93	-10.15	7.06	-10.15	12.36	145.16	0.15
1300.00	0.82	157.51	1299.92	-11.41	7.72	-11.41	13.77	145.92	0.14
1400.00	0.76	160.17	1399.91	-12.70	8.22	-12.70	15.13	147.09	0.07
1500.00	0.66	158.55	1499.90	-13.86	8.66	-13.86	16.34	148.02	0.10
1600.00	0.62	175.37	1599.89	-14.95	8.91	-14.95	17.40	149.19	0.19
1700.00	0.65	196.32	1699.89	-16.04	8.80	-16.04	18.29	151.26	0.23
1800.00	0.85	224.97	1799.88	-17.11	8.11	-17.11	18.93	154.63	0.42
1900.00	0.95	230.72	1899.87	-18.16	6.95	-18.16	19.44	159.06	0.13
2000.00	1.06	245.19	1999.85	-19.07	5.47	-19.07	19.84	164.00	0.27
2100.00	1.03	241.04	2099.83	-19.89	3.84	-19.89	20.26	169.07	0.08
2200.00	1.06	256.22	2199.82	-20.55	2.16	-20.55	20.66	174.01	0.28
2300.00	1.08	266.98	2299.80	-20.82	0.31	-20.82	20.82	179.14	0.20
2400.00	1.14	282.32	2399.78	-20.66	-1.61	-20.66	20.72	184.45	0.30
2500.00	1.30	289.42	2499.76	-20.06	-3.66	-20.06	20.39	190.33	0.22
2600.00	1.47	290.11	2599.73	-19.25	-5.93	-19.25	20.14	197.13	0.16
2700.00	1.49	299.22	2699.70	-18.17	-8.27	-18.17	19.96	204.46	0.24
2800.00	1.53	305.03	2799.66	-16.77	-10.49	-16.77	19.78	212.03	0.16
2900.00	1.48	308.40	2899.63	-15.20	-12.60	-15.20	19.74	219.66	0.10
3000.00	1.27	294.30	2999.60	-13.94	-14.63	-13.94	20.20	226.37	0.40
3100.00	0.99	280.88	3099.58	-13.32	-16.48	-13.32	21.19	231.04	0.38
3200.00	0.84	255.29	3199.57	-13.35	-18.03	-13.35	22.43	233.49	0.43
3300.00	1.10	241.32	3299.55	-13.99	-19.58	-13.99	24.07	234.45	0.35
3400.00	1.11	242.33	3399.53	-14.90	-21.28	-14.90	25.97	235.00	0.02

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	1.13	251.00	3499.52	-15.67	-23.06	-15.67	27.88	235.81	0.17
3600.00	1.10	253.88	3599.50	-16.26	-24.92	-16.26	29.75	236.88	0.06
3700.00	1.22	241.84	3699.48	-17.03	-26.78	-17.03	31.74	237.55	0.27
3800.00	1.19	248.53	3799.45	-17.91	-28.69	-17.91	33.82	238.02	0.14
3900.00	1.15	244.43	3899.43	-18.72	-30.56	-18.72	35.84	238.51	0.09
4000.00	1.21	245.62	3999.41	-19.59	-32.42	-19.59	37.88	238.86	0.06
4100.00	1.22	237.90	4099.39	-20.59	-34.29	-20.59	40.00	239.01	0.16
4200.00	1.24	240.65	4199.37	-21.69	-36.14	-21.69	42.15	239.03	0.06
4300.00	1.35	243.72	4299.34	-22.74	-38.14	-22.74	44.40	239.19	0.13
4400.00	1.55	245.55	4399.31	-23.83	-40.43	-23.83	46.92	239.49	0.21
4500.00	0.83	250.28	4499.29	-24.63	-42.34	-24.63	48.98	239.81	0.73
4600.00	0.32	212.19	4599.28	-25.11	-43.17	-25.11	49.94	239.82	0.61
4700.00	0.43	231.71	4699.28	-25.57	-43.60	-25.57	50.55	239.61	0.17
4800.00	0.09	165.03	4799.28	-25.88	-43.87	-25.88	50.94	239.47	0.40
4900.00	0.47	164.47	4899.28	-26.35	-43.74	-26.35	51.07	238.94	0.37
5000.00	0.41	149.35	4999.27	-27.05	-43.45	-27.05	51.18	238.10	0.13
5100.00	0.24	207.99	5099.27	-27.54	-43.37	-27.54	51.37	237.58	0.35
5200.00	0.29	163.32	5199.27	-27.96	-43.39	-27.96	51.62	237.20	0.20
5300.00	0.19	241.11	5299.27	-28.28	-43.46	-28.28	51.85	236.95	0.31
5400.00	0.36	296.79	5399.27	-28.21	-43.89	-28.21	52.17	237.26	0.30
5500.00	0.28	338.00	5499.27	-27.84	-44.26	-27.84	52.29	237.83	0.24
5600.00	0.27	332.63	5599.27	-27.40	-44.46	-27.40	52.23	238.35	0.03
5700.00	0.54	342.64	5699.26	-26.74	-44.71	-26.74	52.10	239.12	0.27
5800.00	0.95	331.71	5799.26	-25.56	-45.25	-25.56	51.97	240.54	0.44
5900.00	1.07	355.92	5899.24	-23.89	-45.71	-23.89	51.58	242.40	0.44
6000.00	0.66	353.15	5999.23	-22.38	-45.84	-22.38	51.02	243.97	0.41
6100.00	0.84	352.52	6099.22	-21.08	-46.01	-21.08	50.61	245.38	0.17
6200.00	0.85	343.09	6199.21	-19.65	-46.32	-19.65	50.31	247.02	0.14
6300.00	0.76	4.93	6299.20	-18.27	-46.48	-18.27	49.94	248.54	0.32
6400.00	0.62	322.20	6399.19	-17.18	-46.75	-17.18	49.81	249.83	0.52
6500.00	0.76	325.72	6499.19	-16.20	-47.46	-16.20	50.15	251.15	0.14
6600.00	0.33	328.81	6599.18	-15.41	-47.98	-15.41	50.39	252.19	0.43
6700.00	0.31	302.92	6699.18	-15.02	-48.35	-15.02	50.63	252.74	0.14
6800.00	0.81	309.09	6799.17	-14.43	-49.13	-14.43	51.21	253.63	0.50
HORIZONTAL DISPLACEMENT IS 51.21 FEET AT 253.63 DEGREES									