

**VES**

VAUGHN ENERGY SERVICES

Company: Noble Energy  
 Lease/Well: Fabrizio/4-28  
 Location: S28 T11N R61W  
 Rig Name: Production  
 State/County: Colorado/Weld  
 Latitude: 40.90  
 GRID North is 0.83 Degrees East of True North  
 VS-Azi: 0.00 Degrees

**GTI**

GYRO TECHNOLOGIES INC

## FIELD COPY ONLY (NOT DEFINITIVE)

Elevation : 5169 feet

## DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: fabrizius4-28-01\_ed.ut

Minimum Curvature Method

Report Date/Time: 1/12/2011 / 19:51

Vaughn Energy Services  
 Fort Worth, Texas  
 817-741-3610  
 Ray Seago

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	0.69	125.48	100.00	-0.35	0.49	-0.35	0.60	125.48	0.69
200.00	0.69	140.20	199.99	-1.16	1.36	-1.16	1.79	130.38	0.18
300.00	0.50	135.92	299.99	-1.93	2.05	-1.93	2.81	133.32	0.20
400.00	0.30	180.69	399.98	-2.50	2.35	-2.50	3.43	136.87	0.35
500.00	0.45	177.46	499.98	-3.15	2.36	-3.15	3.94	143.20	0.15
600.00	0.21	144.63	599.98	-3.69	2.48	-3.69	4.45	146.08	0.29
700.00	0.31	148.80	699.98	-4.07	2.72	-4.07	4.89	146.17	0.10
800.00	0.29	202.27	799.98	-4.53	2.77	-4.53	5.31	148.57	0.27
900.00	0.38	149.23	899.98	-5.05	2.84	-5.05	5.79	150.62	0.31
1000.00	0.06	267.24	999.97	-5.33	2.96	-5.33	6.10	150.97	0.41
1100.00	0.18	85.82	1099.97	-5.32	3.07	-5.32	6.14	150.05	0.24
1200.00	0.16	349.04	1199.97	-5.17	3.20	-5.17	6.08	148.26	0.26
1300.00	0.19	300.29	1299.97	-4.95	3.03	-4.95	5.80	148.52	0.15
1400.00	0.13	245.46	1399.97	-4.91	2.78	-4.91	5.65	150.48	0.16
1500.00	0.30	20.18	1499.97	-4.71	2.77	-4.71	5.47	149.58	0.41
1600.00	0.29	278.55	1599.97	-4.43	2.61	-4.43	5.14	149.47	0.46
1700.00	0.09	346.81	1699.97	-4.32	2.35	-4.32	4.92	151.47	0.27
1800.00	0.45	287.78	1799.97	-4.13	1.96	-4.13	4.57	154.64	0.41
1900.00	0.47	298.58	1899.97	-3.81	1.22	-3.81	4.00	162.20	0.09
2000.00	0.20	308.88	1999.97	-3.50	0.73	-3.50	3.58	168.28	0.27
2100.00	0.47	280.42	2099.96	-3.32	0.19	-3.32	3.32	176.81	0.31
2200.00	0.44	310.15	2199.96	-3.00	-0.51	-3.00	3.04	189.70	0.24
2300.00	0.51	297.36	2299.96	-2.54	-1.20	-2.54	2.81	205.28	0.13
2400.00	0.42	316.14	2399.95	-2.07	-1.85	-2.07	2.78	221.78	0.18
2500.00	0.49	283.14	2499.95	-1.71	-2.53	-1.71	3.05	235.92	0.27
2600.00	0.35	319.55	2599.95	-1.38	-3.14	-1.38	3.43	246.30	0.30
2700.00	0.54	291.94	2699.95	-0.97	-3.78	-0.97	3.90	255.57	0.28
2800.00	0.27	273.34	2799.94	-0.78	-4.45	-0.78	4.52	260.03	0.30
2900.00	0.23	300.11	2899.94	-0.67	-4.86	-0.67	4.90	262.15	0.12
3000.00	0.26	314.29	2999.94	-0.41	-5.19	-0.41	5.21	265.50	0.07
3100.00	0.39	303.92	3099.94	-0.06	-5.64	-0.06	5.64	269.41	0.14
3200.00	0.30	289.90	3199.94	0.22	-6.17	0.22	6.17	272.04	0.13
3300.00	0.33	243.05	3299.94	0.18	-6.67	0.18	6.67	271.51	0.25
3400.00	0.46	250.37	3399.93	-0.09	-7.31	-0.09	7.31	269.29	0.14

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	0.38	247.11	3499.93	-0.35	-7.99	-0.35	8.00	267.46	0.09
3600.00	0.29	237.86	3599.93	-0.62	-8.51	-0.62	8.53	265.85	0.10
3700.00	0.35	283.45	3699.93	-0.68	-9.02	-0.68	9.04	265.66	0.25
3800.00	0.40	268.83	3799.93	-0.62	-9.66	-0.62	9.68	266.32	0.11
3900.00	0.44	238.55	3899.92	-0.83	-10.34	-0.83	10.37	265.43	0.22
4000.00	0.22	269.17	3999.92	-1.03	-10.86	-1.03	10.91	264.59	0.27
4100.00	0.26	301.47	4099.92	-0.91	-11.25	-0.91	11.29	265.37	0.14
4200.00	0.39	284.48	4199.92	-0.71	-11.78	-0.71	11.80	266.57	0.16
4300.00	0.64	264.88	4299.92	-0.67	-12.66	-0.67	12.68	266.97	0.30
4400.00	0.74	260.97	4399.91	-0.82	-13.85	-0.82	13.88	266.61	0.11
4500.00	0.72	276.24	4499.90	-0.85	-15.12	-0.85	15.14	266.77	0.20
4600.00	0.61	274.84	4599.89	-0.74	-16.27	-0.74	16.29	267.39	0.12
4700.00	0.81	281.73	4699.89	-0.55	-17.49	-0.55	17.50	268.19	0.22
4800.00	0.84	279.71	4799.88	-0.29	-18.91	-0.29	18.91	269.13	0.05
4900.00	0.87	291.11	4899.86	0.11	-20.34	0.11	20.34	270.31	0.17
5000.00	0.89	279.94	4999.85	0.52	-21.81	0.52	21.82	271.36	0.17
5100.00	1.14	287.43	5099.84	0.95	-23.53	0.95	23.55	272.31	0.28
5200.00	1.01	296.40	5199.82	1.64	-25.27	1.64	25.32	273.71	0.21
5300.00	1.14	307.08	5299.80	2.63	-26.85	2.63	26.98	275.60	0.24
5400.00	1.54	314.93	5399.77	4.18	-28.59	4.18	28.89	278.31	0.44
5500.00	1.76	318.34	5499.73	6.27	-30.56	6.27	31.20	281.59	0.24
5600.00	1.98	313.71	5599.68	8.61	-32.83	8.61	33.94	284.70	0.27
5700.00	2.02	316.11	5699.62	11.07	-35.30	11.07	36.99	287.42	0.09
5800.00	1.30	321.47	5799.58	13.23	-37.23	13.23	39.51	289.57	0.74
5900.00	0.91	324.06	5899.56	14.76	-38.40	14.76	41.14	291.03	0.39
6000.00	0.85	331.01	5999.55	16.06	-39.23	16.06	42.39	292.27	0.12
6100.00	0.52	323.20	6099.54	17.08	-39.87	17.08	43.37	293.19	0.34
6200.00	0.41	315.19	6199.53	17.70	-40.39	17.70	44.10	293.66	0.13
6300.00	0.36	351.05	6299.53	18.27	-40.69	18.27	44.60	294.17	0.24
6400.00	0.20	36.82	6399.53	18.72	-40.64	18.72	44.74	294.73	0.27
6500.00	0.12	71.26	6499.53	18.89	-40.43	18.89	44.63	295.05	0.12
6600.00	0.04	31.70	6599.53	18.96	-40.31	18.96	44.55	295.19	0.09
6700.00	0.23	138.66	6699.53	18.84	-40.16	18.84	44.36	295.13	0.24
6800.00	0.23	158.66	6799.53	18.51	-39.96	18.51	44.04	294.85	0.08
6900.00	0.20	169.51	6899.53	18.15	-39.86	18.15	43.79	294.48	0.05
7000.00	0.22	114.91	6999.53	17.89	-39.65	17.89	43.50	294.29	0.20
7100.00	0.40	151.53	7099.53	17.50	-39.31	17.50	43.03	294.00	0.26
7200.00	0.53	119.70	7199.52	16.96	-38.73	16.96	42.28	293.65	0.29
7300.00	0.38	124.48	7299.52	16.54	-38.05	16.54	41.49	293.49	0.16
7400.00	0.38	109.60	7399.52	16.24	-37.47	16.24	40.83	293.44	0.10
7500.00	0.20	153.71	7499.52	15.97	-37.07	15.97	40.37	293.31	0.28
7600.00	0.24	86.73	7599.52	15.83	-36.79	15.83	40.05	293.28	0.24
7700.00	0.38	139.44	7699.52	15.59	-36.37	15.59	39.57	293.20	0.30
7735.00	0.20	93.42	7734.52	15.50	-36.24	15.50	39.41	293.16	0.79

HORIZONTAL DISPLACEMENT IS 39.41 FEET AT 293.16 DEGREES									
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