

VES

VAUGHN ENERGY SERVICES

Company: Noble Energy

Lease/Well: State/36-1014

Location: S36 T4N R64W

Rig Name: Production

State/County: Colorado/Weld

Latitude: 40.27, Longitude: 104.50

GRID North is 0.65 Degrees East of True North

VS-Azi: 0.00 Degrees

GTI

GYRO TECHNOLOGIES INC

FIELD COPY ONLY (NOT DEFINITIVE)

Elevation : 4719

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: state36-1014_ed.ut

Minimum Curvature Method

Report Date/Time: 12/31/2010 / 17:48

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	0.17	271.27	100.00	0.00	-0.15	0.00	0.15	271.27	0.17
200.00	0.11	267.77	200.00	0.00	-0.39	0.00	0.39	270.38	0.05
300.00	0.14	265.28	300.00	-0.01	-0.61	-0.01	0.61	268.94	0.03
400.00	0.17	249.52	400.00	-0.07	-0.87	-0.07	0.87	265.27	0.05
500.00	0.17	237.74	500.00	-0.20	-1.13	-0.20	1.15	259.92	0.03
600.00	0.21	227.57	600.00	-0.41	-1.39	-0.41	1.45	253.78	0.06
700.00	0.22	250.32	700.00	-0.59	-1.71	-0.59	1.81	250.81	0.08
800.00	0.20	267.12	800.00	-0.67	-2.06	-0.67	2.17	252.08	0.06
900.00	0.17	254.48	900.00	-0.72	-2.38	-0.72	2.49	253.27	0.05
1000.00	0.08	228.44	1000.00	-0.80	-2.58	-0.80	2.70	252.70	0.10
1100.00	0.10	208.83	1100.00	-0.93	-2.68	-0.93	2.83	250.87	0.04
1200.00	0.14	210.60	1200.00	-1.11	-2.78	-1.11	3.00	248.21	0.04
1300.00	0.13	212.54	1300.00	-1.31	-2.91	-1.31	3.19	245.66	0.02
1400.00	0.15	214.08	1399.99	-1.52	-3.04	-1.52	3.40	243.45	0.03
1500.00	0.07	202.56	1499.99	-1.68	-3.14	-1.68	3.56	241.78	0.09
1600.00	0.17	199.27	1599.99	-1.88	-3.21	-1.88	3.72	239.70	0.10
1700.00	0.16	190.66	1699.99	-2.15	-3.28	-2.15	3.93	236.76	0.03
1800.00	0.26	188.87	1799.99	-2.51	-3.34	-2.51	4.18	233.06	0.10
1900.00	0.16	189.92	1899.99	-2.88	-3.40	-2.88	4.46	229.79	0.10
2000.00	0.27	182.69	1999.99	-3.25	-3.44	-3.25	4.73	226.62	0.11
2100.00	0.34	186.85	2099.99	-3.78	-3.48	-3.78	5.14	222.71	0.07
2200.00	0.46	181.22	2199.99	-4.47	-3.53	-4.47	5.69	218.29	0.13
2300.00	0.74	181.31	2299.98	-5.51	-3.55	-5.51	6.56	212.79	0.28
2400.00	0.60	175.34	2399.98	-6.68	-3.52	-6.68	7.55	207.82	0.15
2500.00	0.64	169.93	2499.97	-7.75	-3.38	-7.75	8.46	203.58	0.07
2600.00	0.73	158.75	2599.96	-8.90	-3.05	-8.90	9.41	198.95	0.16
2700.00	0.51	147.00	2699.96	-9.87	-2.58	-9.87	10.20	194.65	0.25
2800.00	0.57	131.50	2799.95	-10.57	-1.96	-10.57	10.75	190.51	0.16
2900.00	0.55	125.24	2899.95	-11.18	-1.19	-11.18	11.25	186.08	0.07
3000.00	0.58	117.77	2999.94	-11.70	-0.35	-11.70	11.70	181.71	0.08
3100.00	0.34	108.71	3099.94	-12.03	0.38	-12.03	12.04	178.18	0.25
3200.00	0.47	112.12	3199.94	-12.28	1.05	-12.28	12.33	175.13	0.13
3300.00	0.62	103.63	3299.93	-12.56	1.95	-12.56	12.71	171.19	0.17
3400.00	0.76	100.94	3399.93	-12.81	3.12	-12.81	13.19	166.30	0.15

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	0.82	97.60	3499.92	-13.04	4.49	-13.04	13.79	161.01	0.07
3600.00	0.90	90.46	3599.90	-13.14	5.98	-13.14	14.43	155.51	0.14
3700.00	1.08	78.75	3699.89	-12.96	7.70	-12.96	15.07	149.30	0.27
3800.00	1.10	71.67	3799.87	-12.47	9.53	-12.47	15.70	142.61	0.14
3900.00	1.13	61.45	3899.85	-11.70	11.31	-11.70	16.27	135.96	0.20
4000.00	1.21	53.89	3999.83	-10.61	13.03	-10.61	16.80	129.14	0.17
4100.00	1.23	47.54	4099.81	-9.26	14.67	-9.26	17.35	122.26	0.14
4200.00	1.24	49.53	4199.79	-7.84	16.28	-7.84	18.07	115.71	0.04
4300.00	1.18	57.02	4299.76	-6.58	17.97	-6.58	19.14	110.10	0.17
4400.00	1.27	64.83	4399.74	-5.54	19.84	-5.54	20.60	105.61	0.19
4500.00	1.20	85.21	4499.72	-4.98	21.89	-4.98	22.45	102.83	0.44
4600.00	1.36	84.82	4599.69	-4.79	24.12	-4.79	24.59	101.23	0.15
4700.00	1.46	81.14	4699.66	-4.49	26.55	-4.49	26.93	99.59	0.14
4800.00	1.60	89.27	4799.63	-4.27	29.20	-4.27	29.51	98.32	0.26
4900.00	1.26	91.49	4899.60	-4.28	31.70	-4.28	31.98	97.70	0.34
5000.00	1.64	95.02	4999.56	-4.44	34.22	-4.44	34.51	97.39	0.39
5100.00	1.57	97.38	5099.52	-4.74	37.01	-4.74	37.31	97.30	0.10
5200.00	1.44	104.36	5199.49	-5.23	39.59	-5.23	39.93	97.52	0.23
5300.00	1.20	110.22	5299.46	-5.90	41.79	-5.90	42.20	98.04	0.27
5400.00	0.81	121.42	5399.45	-6.63	43.37	-6.63	43.88	98.69	0.44
5500.00	0.88	134.41	5499.44	-7.54	44.53	-7.54	45.16	99.61	0.21
5600.00	0.45	174.69	5599.43	-8.47	45.11	-8.47	45.90	100.63	0.62
5700.00	0.42	180.28	5699.43	-9.22	45.15	-9.22	46.08	101.54	0.05
5800.00	0.35	184.38	5799.43	-9.89	45.12	-9.89	46.19	102.37	0.07
5900.00	0.29	183.28	5899.42	-10.45	45.09	-10.45	46.28	103.05	0.06
6000.00	0.21	182.33	5999.42	-10.89	45.06	-10.89	46.36	103.58	0.08
6100.00	0.12	185.27	6099.42	-11.17	45.05	-11.17	46.41	103.93	0.09
6200.00	0.17	191.10	6199.42	-11.42	45.01	-11.42	46.43	104.24	0.06
6300.00	0.17	183.57	6299.42	-11.71	44.97	-11.71	46.47	104.60	0.02
6400.00	0.16	187.77	6399.42	-12.00	44.94	-12.00	46.52	104.95	0.02
6500.00	0.30	187.98	6499.42	-12.39	44.89	-12.39	46.57	105.43	0.14
6600.00	0.28	189.01	6599.42	-12.89	44.81	-12.89	46.63	106.05	0.02
6700.00	0.06	184.64	6699.42	-13.18	44.77	-13.18	46.67	106.41	0.21
6800.00	0.01	183.49	6799.42	-13.25	44.77	-13.25	46.68	106.48	0.06
<div> <div>HORIZONTAL DISPLACEMENT IS</div> <div>46.68 FEET AT 106.48 DEGREES</div> </div>									