

VES

VAUGHN ENERGY SERVICES

Company: Noble Energy
 Lease/Well: State Schmidt / 36-4
 Location: S-36 T-5N R-65W
 Rig Name: Production
 State/County: Colorado / Weld County
 Latitude: 40.35, Longitude: -104.61
 GRID North is 0.57 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 / 19:54

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	0.23	226.10	100.00	-0.14	-0.15	-0.14	0.20	226.10	0.23
200.00	0.17	209.27	200.00	-0.41	-0.36	-0.41	0.55	221.60	0.08
300.00	0.19	253.09	300.00	-0.59	-0.59	-0.59	0.83	225.32	0.13
400.00	0.33	290.85	400.00	-0.53	-1.02	-0.53	1.15	242.33	0.21
500.00	0.36	329.07	500.00	-0.16	-1.44	-0.16	1.45	263.67	0.23
600.00	0.45	338.97	599.99	0.48	-1.75	0.48	1.81	285.27	0.11
700.00	0.15	53.78	699.99	0.92	-1.78	0.92	2.01	297.30	0.43
800.00	0.12	76.03	799.99	1.02	-1.57	1.02	1.88	303.04	0.06
900.00	0.01	1.56	899.99	1.06	-1.47	1.06	1.81	305.74	0.12
1000.00	0.14	316.65	999.99	1.16	-1.55	1.16	1.94	306.63	0.13
1100.00	0.33	332.07	1099.99	1.50	-1.77	1.50	2.32	310.23	0.20
1200.00	0.24	53.51	1199.99	1.88	-1.74	1.88	2.56	317.27	0.38
1300.00	0.50	31.33	1299.99	2.38	-1.34	2.38	2.74	330.65	0.29
1400.00	0.58	335.16	1399.98	3.22	-1.32	3.22	3.48	337.63	0.51
1500.00	0.59	346.59	1499.98	4.18	-1.66	4.18	4.50	338.38	0.12
1600.00	0.27	357.63	1599.98	4.92	-1.79	4.92	5.23	340.05	0.33
1700.00	0.30	21.18	1699.97	5.40	-1.70	5.40	5.66	342.51	0.12
1800.00	0.72	331.22	1799.97	6.20	-1.91	6.20	6.48	342.86	0.58
1900.00	0.63	345.29	1899.96	7.28	-2.35	7.28	7.65	342.08	0.19
2000.00	0.75	317.52	1999.96	8.29	-2.94	8.29	8.79	340.50	0.35
2100.00	0.55	16.10	2099.95	9.24	-3.25	9.24	9.79	340.64	0.66
2200.00	0.41	354.18	2199.95	10.05	-3.15	10.05	10.53	342.61	0.23
2300.00	0.57	1.83	2299.94	10.91	-3.17	10.91	11.36	343.80	0.18
2400.00	0.83	11.57	2399.94	12.12	-3.01	12.12	12.49	346.07	0.29
2500.00	0.72	36.38	2499.93	13.34	-2.49	13.34	13.57	349.45	0.35
2600.00	0.63	10.63	2599.92	14.39	-2.01	14.39	14.53	352.05	0.32
2700.00	0.44	16.03	2699.92	15.30	-1.80	15.30	15.40	353.28	0.20
2800.00	0.29	37.18	2799.91	15.87	-1.54	15.87	15.94	354.45	0.19
2900.00	0.74	8.61	2899.91	16.71	-1.29	16.71	16.76	355.58	0.50
3000.00	0.69	18.87	2999.90	17.92	-1.00	17.92	17.94	356.80	0.14
3100.00	0.64	22.72	3099.90	19.00	-0.59	19.00	19.01	358.22	0.06
3200.00	0.43	124.65	3199.89	19.31	-0.06	19.31	19.31	359.82	0.85
3300.00	0.31	160.13	3299.89	18.84	0.34	18.84	18.84	1.04	0.26
3400.00	0.52	194.36	3399.89	18.14	0.32	18.14	18.15	1.02	0.31
3500.00	0.70	205.21	3499.88	17.15	-0.05	17.15	17.15	359.83	0.22
3600.00	0.64	214.71	3599.88	16.13	-0.63	16.13	16.15	357.76	0.13
3700.00	0.63	198.77	3699.87	15.16	-1.13	15.16	15.20	355.75	0.18
3800.00	1.04	184.50	3799.86	13.74	-1.37	13.74	13.81	354.29	0.46

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
3900.00	1.01	194.38	3899.84	11.98	-1.66	11.98	12.10	352.10	0.18
4000.00	0.74	236.97	3999.83	10.78	-2.42	10.78	11.05	347.34	0.68
4100.00	0.67	241.81	4099.83	10.15	-3.48	10.15	10.73	341.09	0.09
4200.00	0.48	200.11	4199.82	9.48	-4.14	9.48	10.35	336.43	0.45
4300.00	0.64	228.32	4299.82	8.72	-4.70	8.72	9.90	331.67	0.32
4400.00	0.58	228.94	4399.81	8.01	-5.50	8.01	9.72	325.54	0.07
4500.00	0.19	241.28	4499.81	7.61	-6.02	7.61	9.70	321.63	0.40
4600.00	0.14	251.00	4599.81	7.49	-6.28	7.49	9.77	320.01	0.05
4700.00	0.53	201.88	4699.81	7.02	-6.57	7.02	9.61	316.91	0.45
4800.00	0.44	131.10	4799.80	6.34	-6.45	6.34	9.04	314.51	0.57
4900.00	0.67	130.18	4899.80	5.71	-5.72	5.71	8.08	314.98	0.22
5000.00	1.10	121.43	4999.79	4.84	-4.46	4.84	6.58	317.36	0.45
5100.00	0.85	148.88	5099.77	3.70	-3.26	3.70	4.93	318.69	0.52
5200.00	0.78	219.53	5199.76	2.55	-3.30	2.55	4.17	307.62	0.94
5300.00	1.43	253.19	5299.75	1.66	-4.93	1.66	5.21	288.62	0.90
5400.00	1.99	278.94	5399.70	1.57	-7.84	1.57	8.00	281.32	0.93
5500.00	2.44	300.64	5499.63	2.93	-11.39	2.93	11.76	284.41	0.95
5600.00	2.70	317.66	5599.53	5.75	-14.81	5.75	15.89	291.23	0.80
5700.00	2.34	330.26	5699.43	9.27	-17.41	9.27	19.72	298.03	0.66
5800.00	2.29	353.66	5799.35	13.03	-18.65	13.03	22.75	304.95	0.94
5900.00	1.99	6.96	5899.29	16.74	-18.66	16.74	25.07	311.91	0.58
6000.00	1.63	30.28	5999.24	19.70	-17.73	19.70	26.50	318.01	0.81
6100.00	1.18	26.04	6099.21	21.85	-16.56	21.85	27.42	322.84	0.47
6200.00	1.41	38.28	6199.18	23.74	-15.34	23.74	28.27	327.12	0.36
6300.00	0.98	41.07	6299.16	25.35	-14.02	25.35	28.97	331.06	0.43
6400.00	0.83	55.71	6399.15	26.40	-12.86	26.40	29.37	334.03	0.28
6500.00	0.58	35.53	6499.14	27.22	-11.97	27.22	29.74	336.26	0.35
6600.00	0.62	67.98	6599.13	27.84	-11.18	27.84	30.00	338.12	0.34
6700.00	0.56	59.85	6699.13	28.28	-10.26	28.28	30.08	340.06	0.10
6800.00	0.46	77.03	6799.12	28.62	-9.45	28.62	30.13	341.73	0.18
6900.00	0.63	106.44	6899.12	28.55	-8.53	28.55	29.80	343.37	0.32
7000.00	0.72	121.78	6999.11	28.07	-7.47	28.07	29.04	345.10	0.20
HORIZONTAL DISPLACEMENT IS 29.04 FEET AT 345.10 DEGREES									