

VES

VAUGHN ENERGY SERVICES

Company: Noble Energy

Lease/Well: UPRC / 13-14J

Location: S-13 T-3N R-65W

Rig Name: Production

State/County: Colorado / Weld County

Latitude: 40.22, 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: 5/9/2011 / 19:33

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	329.42	100.00	0.16	-0.09	0.16	0.19	329.42	0.21
200.00	0.33	352.54	200.00	0.61	-0.23	0.61	0.65	339.49	0.16
300.00	0.47	314.98	300.00	1.18	-0.55	1.18	1.30	334.89	0.29
400.00	0.20	274.81	399.99	1.48	-1.01	1.48	1.80	325.67	0.34
500.00	0.43	299.48	499.99	1.68	-1.51	1.68	2.26	318.10	0.26
600.00	0.37	312.52	599.99	2.08	-2.07	2.08	2.94	315.16	0.11
700.00	0.55	278.84	699.99	2.38	-2.79	2.38	3.66	310.44	0.32
800.00	0.47	312.22	799.98	2.72	-3.57	2.72	4.49	307.37	0.30
900.00	0.33	303.71	899.98	3.16	-4.11	3.16	5.18	307.54	0.14
1000.00	0.55	292.26	999.98	3.50	-4.80	3.50	5.94	306.13	0.23
1100.00	0.56	292.88	1099.97	3.87	-5.69	3.87	6.89	304.24	0.01
1200.00	0.54	295.46	1199.97	4.27	-6.57	4.27	7.84	303.00	0.03
1300.00	0.80	299.29	1299.96	4.82	-7.61	4.82	9.01	302.32	0.26
1400.00	1.39	312.39	1399.94	5.97	-9.12	5.97	10.90	303.24	0.64
1500.00	2.18	318.12	1499.89	8.21	-11.28	8.21	13.95	306.04	0.81
1600.00	2.64	326.39	1599.81	11.54	-13.83	11.54	18.01	309.85	0.57
1700.00	2.70	330.01	1699.70	15.50	-16.28	15.50	22.47	313.59	0.18
1800.00	2.41	332.70	1799.60	19.40	-18.42	19.40	26.75	316.49	0.31
1900.00	2.49	333.65	1899.51	23.22	-20.35	23.22	30.87	318.77	0.08
2000.00	2.42	346.29	1999.42	27.21	-21.81	27.21	34.87	321.29	0.54
2100.00	2.36	346.65	2099.33	31.26	-22.78	31.26	38.68	323.91	0.06
2200.00	2.74	347.28	2199.23	35.59	-23.78	35.59	42.80	326.25	0.38
2300.00	2.61	344.33	2299.12	40.11	-24.92	40.11	47.22	328.14	0.19
2400.00	3.02	342.52	2399.00	44.81	-26.33	44.81	51.97	329.56	0.41
2500.00	3.42	343.49	2498.84	50.18	-27.97	50.18	57.45	330.87	0.41
2600.00	4.00	350.34	2598.63	56.48	-29.40	56.48	63.67	332.50	0.73
2700.00	4.47	352.05	2698.36	63.77	-30.52	63.77	70.70	334.42	0.48
2800.00	4.32	354.18	2798.07	71.37	-31.44	71.37	77.99	336.22	0.22
2900.00	4.33	356.40	2897.78	78.88	-32.06	78.88	85.15	337.88	0.17
3000.00	4.22	354.24	2997.50	86.31	-32.67	86.31	92.29	339.27	0.20
3100.00	3.96	7.45	3097.25	93.39	-32.59	93.39	98.91	340.76	0.97
3200.00	3.33	18.02	3197.05	99.57	-31.24	99.57	104.35	342.58	0.92
3300.00	2.74	30.14	3296.91	104.39	-29.15	104.39	108.39	344.40	0.87
3400.00	2.45	50.63	3396.81	107.82	-26.29	107.82	110.98	346.29	0.97

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	2.00	46.31	3496.74	110.38	-23.38	110.38	112.83	348.04	0.48
3600.00	1.62	26.43	3596.69	112.85	-21.48	112.85	114.88	349.22	0.73
3700.00	1.18	29.02	3696.66	115.03	-20.35	115.03	116.81	349.97	0.44
3800.00	0.88	29.09	3796.64	116.60	-19.48	116.60	118.22	350.52	0.31
3900.00	0.77	15.16	3896.63	117.92	-18.93	117.92	119.43	350.88	0.23
4000.00	0.89	14.07	3996.62	119.32	-18.56	119.32	120.76	351.16	0.12
4100.00	0.77	12.22	4096.61	120.74	-18.23	120.74	122.11	351.41	0.12
4200.00	0.62	351.13	4196.60	121.93	-18.17	121.93	123.27	351.52	0.30
4300.00	0.62	4.62	4296.60	123.00	-18.21	123.00	124.34	351.58	0.15
4400.00	0.48	12.88	4396.59	123.95	-18.07	123.95	125.26	351.70	0.17
4500.00	0.68	359.85	4496.59	124.94	-17.98	124.94	126.23	351.81	0.24
4600.00	0.48	342.42	4596.58	125.94	-18.11	125.94	127.23	351.82	0.26
4700.00	0.64	334.23	4696.58	126.84	-18.48	126.84	128.18	351.71	0.17
4800.00	0.38	339.52	4796.57	127.65	-18.84	127.65	129.03	351.60	0.26
4900.00	0.41	12.04	4896.57	128.31	-18.88	128.31	129.69	351.63	0.22
5000.00	0.61	349.15	4996.57	129.18	-18.90	129.18	130.55	351.67	0.28
5100.00	0.71	21.92	5096.56	130.27	-18.77	130.27	131.62	351.80	0.38
5200.00	0.49	30.50	5196.55	131.21	-18.33	131.21	132.49	352.05	0.24
5300.00	0.19	28.54	5296.55	131.73	-18.03	131.73	132.95	352.21	0.29
5400.00	0.22	308.01	5396.55	131.99	-18.10	131.99	133.22	352.19	0.26
5500.00	0.12	22.33	5496.55	132.21	-18.21	132.21	133.45	352.16	0.22
5600.00	0.04	133.44	5596.55	132.28	-18.14	132.28	133.52	352.19	0.14
5700.00	0.21	14.13	5696.55	132.44	-18.07	132.44	133.67	352.23	0.23
5800.00	0.28	288.79	5796.55	132.70	-18.26	132.70	133.95	352.17	0.33
5900.00	0.18	226.62	5896.55	132.67	-18.60	132.67	133.97	352.02	0.25
6000.00	0.15	318.64	5996.55	132.66	-18.79	132.66	133.99	351.94	0.23
6100.00	0.14	135.13	6096.55	132.67	-18.79	132.67	133.99	351.94	0.29
6200.00	0.50	13.10	6196.55	133.00	-18.60	133.00	134.30	352.04	0.59
6300.00	0.46	47.35	6296.54	133.70	-18.21	133.70	134.93	352.24	0.28
6400.00	0.87	45.38	6396.54	134.50	-17.38	134.50	135.62	352.64	0.42
6500.00	1.44	60.55	6496.52	135.65	-15.74	135.65	136.56	353.38	0.64

HORIZONTAL DISPLACEMENT IS
136.56 FEET AT 353.38 DEGREES