



Company: Noble Energy
Lease/Well: Quinby MD / 12-2
Location: S-12 T-1S R-69W

Rig Name: Production
State/County: Colorado / Boulder County
Latitude: 39.98, Longitude: -105.06
GRID North is 0.28 Degrees East of True North
VS-Azi: 0.00 Degrees



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: 7/21/2011 / 16:52

Vaughn Energy Services
Henderson, CO
970-625-8041
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	0.82	93.87	100.00	-0.05	0.71	-0.05	0.71	93.87	0.82
200.00	0.46	47.39	199.99	0.18	1.72	0.18	1.73	84.18	0.60
300.00	0.39	60.94	299.99	0.61	2.32	0.61	2.40	75.17	0.12
400.00	0.34	53.03	399.99	0.96	2.85	0.96	3.00	71.46	0.07
500.00	0.24	82.31	499.98	1.16	3.29	1.16	3.49	70.59	0.17
600.00	0.16	74.33	599.98	1.23	3.63	1.23	3.83	71.36	0.09
700.00	0.18	174.89	699.98	1.11	3.78	1.11	3.94	73.69	0.26
800.00	0.50	240.95	799.98	0.74	3.41	0.74	3.49	77.83	0.46
900.00	0.61	239.74	899.98	0.25	2.56	0.25	2.57	84.37	0.11
1000.00	0.77	229.11	999.97	-0.46	1.59	-0.46	1.66	105.96	0.20
1100.00	1.17	249.73	1099.96	-1.25	0.13	-1.25	1.25	173.89	0.52
1200.00	1.71	250.37	1199.92	-2.10	-2.22	-2.10	3.06	226.65	0.54
1300.00	2.33	255.10	1299.86	-3.12	-5.59	-3.12	6.41	240.82	0.64
1400.00	3.25	260.15	1399.74	-4.13	-10.35	-4.13	11.14	248.24	0.95
1500.00	4.15	264.99	1499.53	-4.93	-16.75	-4.93	17.46	253.59	0.96
1600.00	5.02	268.00	1599.21	-5.40	-24.73	-5.40	25.31	257.68	0.90
1700.00	5.72	273.38	1698.77	-5.26	-34.07	-5.26	34.48	261.23	0.86
1800.00	5.76	264.31	1798.27	-5.46	-44.04	-5.46	44.38	262.93	0.91
1900.00	5.42	267.81	1897.80	-6.14	-53.75	-6.14	54.10	263.48	0.48
2000.00	4.82	260.88	1997.40	-6.99	-62.62	-6.99	63.01	263.63	0.86
2100.00	4.31	265.68	2097.08	-7.93	-70.51	-7.93	70.95	263.58	0.64
2200.00	4.32	269.58	2196.80	-8.25	-78.01	-8.25	78.45	263.97	0.29
2300.00	4.22	267.88	2296.52	-8.41	-85.45	-8.41	85.87	264.38	0.16
2400.00	4.00	269.61	2396.27	-8.57	-92.61	-8.57	93.01	264.71	0.25
2500.00	3.98	264.71	2496.02	-8.91	-99.56	-8.91	99.96	264.88	0.34
2600.00	3.82	272.55	2595.79	-9.08	-106.35	-9.08	106.74	265.12	0.56
2700.00	3.61	281.79	2695.58	-8.29	-112.76	-8.29	113.06	265.79	0.63
2800.00	3.47	280.96	2795.39	-7.07	-118.82	-7.07	119.03	266.59	0.15
2900.00	3.60	281.89	2895.20	-5.85	-124.86	-5.85	125.00	267.32	0.15
3000.00	3.50	281.37	2995.01	-4.60	-130.93	-4.60	131.01	267.99	0.11
3100.00	4.05	284.55	3094.79	-3.11	-137.34	-3.11	137.37	268.70	0.59
3200.00	4.79	281.42	3194.50	-1.40	-144.84	-1.40	144.85	269.45	0.77
3300.00	4.78	283.36	3294.15	0.39	-152.98	0.39	152.98	270.15	0.16
3400.00	4.45	275.89	3393.82	1.75	-160.90	1.75	160.91	270.62	0.68

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	3.66	277.03	3493.57	2.54	-167.92	2.54	167.94	270.87	0.80
3600.00	3.32	289.71	3593.39	3.91	-173.82	3.91	173.86	271.29	0.84
3700.00	3.40	300.84	3693.22	6.40	-179.09	6.40	179.21	272.05	0.66
3800.00	3.43	309.81	3793.04	9.84	-183.94	9.84	184.20	273.06	0.53
3900.00	3.39	322.37	3892.87	14.09	-188.04	14.09	188.56	274.29	0.75
4000.00	3.35	335.28	3992.69	19.08	-191.06	19.08	192.01	275.70	0.76
4100.00	3.45	340.82	4092.52	24.57	-193.27	24.57	194.82	277.25	0.34
4200.00	3.51	340.57	4192.34	30.30	-195.28	30.30	197.61	278.82	0.06
4300.00	3.53	346.85	4292.15	36.19	-196.99	36.19	200.29	280.41	0.39
4400.00	3.68	355.45	4391.95	42.38	-197.95	42.38	202.44	282.09	0.56
4500.00	3.63	353.20	4491.75	48.72	-198.58	48.72	204.47	283.79	0.15
4600.00	3.09	348.90	4591.57	54.51	-199.47	54.51	206.78	285.28	0.60
4700.00	2.96	338.16	4691.44	59.54	-200.95	59.54	209.58	286.50	0.58
4800.00	2.90	320.87	4791.31	63.89	-203.50	63.89	213.30	287.43	0.88
4900.00	2.84	317.80	4891.18	67.69	-206.76	67.69	217.56	288.13	0.16
5000.00	2.62	310.13	4991.07	70.99	-210.17	70.99	221.83	288.66	0.43
5100.00	2.50	330.86	5090.97	74.37	-212.97	74.37	225.59	289.25	0.93
5200.00	1.85	326.97	5190.90	77.63	-214.92	77.63	228.51	289.86	0.67
5300.00	1.38	298.10	5290.86	79.55	-216.86	79.55	230.99	290.14	0.92
5400.00	1.11	267.72	5390.84	80.08	-218.89	80.08	233.08	290.09	0.70
5500.00	1.06	232.49	5490.82	79.48	-220.58	79.48	234.47	289.81	0.66
5600.00	0.87	229.94	5590.81	78.42	-221.90	78.42	235.35	289.46	0.19
5700.00	0.56	275.51	5690.80	77.98	-222.97	77.98	236.21	289.28	0.63
5800.00	0.64	323.26	5790.80	78.48	-223.79	78.48	237.15	289.32	0.49
5900.00	0.31	274.06	5890.79	78.95	-224.40	78.95	237.88	289.38	0.50
6000.00	0.47	5.84	5990.79	79.37	-224.62	79.37	238.23	289.46	0.57
6100.00	0.36	306.08	6090.79	79.96	-224.84	79.96	238.63	289.58	0.42
6200.00	0.51	286.56	6190.79	80.27	-225.51	80.27	239.37	289.59	0.20
6300.00	0.61	274.06	6290.78	80.43	-226.46	80.43	240.32	289.55	0.16
6400.00	0.88	281.41	6390.77	80.62	-227.75	80.62	241.60	289.49	0.29
6500.00	0.74	286.80	6490.76	80.96	-229.12	80.96	243.00	289.46	0.17
6600.00	0.92	298.85	6590.75	81.54	-230.44	81.54	244.44	289.49	0.25
6700.00	1.16	332.84	6690.74	82.83	-231.61	82.83	245.97	289.68	0.65
6800.00	0.38	347.94	6790.73	84.05	-232.14	84.05	246.89	289.90	0.80
6900.00	1.10	13.60	6890.72	85.31	-231.98	85.31	247.17	290.19	0.77
7000.00	0.61	4.97	6990.71	86.78	-231.71	86.78	247.43	290.53	0.50
7100.00	0.67	19.76	7090.70	87.86	-231.47	87.86	247.58	290.79	0.17
7200.00	0.82	351.67	7190.69	89.12	-231.37	89.12	247.94	291.07	0.39
7300.00	1.12	359.25	7290.68	90.81	-231.49	90.81	248.66	291.42	0.32
7400.00	0.40	351.66	7390.67	92.13	-231.55	92.13	249.21	291.70	0.72
7500.00	0.57	164.75	7490.67	92.00	-231.47	92.00	249.09	291.67	0.97
7600.00	1.06	178.79	7590.66	90.59	-231.32	90.59	248.43	291.39	0.53
7700.00	1.99	174.58	7690.62	87.94	-231.14	87.94	247.30	290.83	0.93
7800.00	2.77	188.46	7790.53	83.82	-231.33	83.82	246.05	289.92	0.97
7900.00	1.90	185.08	7890.45	79.78	-231.83	79.78	245.18	288.99	0.89
8000.00	1.05	188.53	7990.42	77.22	-232.12	77.22	244.63	288.40	0.85
HORIZONTAL DISPLACEMENT IS 244.63 FEET AT 288.40 DEGREES									