



Company: Noble Energy
Lease/Well: Mick D / 18-13
Location: S-18 T-3N R-64W
Rig Name: Production
State/County: Colorado / Weld County
Latitude: 40.22, Longitude: -104.60
GRID North is 0.58 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: 6/28/2011 / 02:32

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	0.07	262.47	100.00	-0.01	-0.06	-0.01	0.06	262.47	0.07
200.00	0.11	213.64	200.00	-0.09	-0.18	-0.09	0.20	242.43	0.08
300.00	0.05	301.35	300.00	-0.15	-0.27	-0.15	0.30	240.92	0.11
400.00	0.10	329.32	400.00	-0.05	-0.35	-0.05	0.35	262.03	0.06
500.00	0.09	17.85	500.00	0.10	-0.37	0.10	0.38	285.49	0.08
600.00	0.16	315.19	600.00	0.28	-0.45	0.28	0.52	301.84	0.14
700.00	0.06	276.43	700.00	0.38	-0.60	0.38	0.71	302.63	0.12
800.00	0.32	279.81	800.00	0.44	-0.93	0.44	1.03	295.19	0.26
900.00	0.38	320.55	900.00	0.74	-1.42	0.74	1.60	297.63	0.25
1000.00	0.32	294.20	999.99	1.11	-1.88	1.11	2.19	300.61	0.17
1100.00	0.51	264.20	1099.99	1.18	-2.58	1.18	2.84	294.61	0.29
1200.00	0.65	305.92	1199.99	1.47	-3.48	1.47	3.78	292.85	0.43
1300.00	0.42	290.28	1299.98	1.93	-4.29	1.93	4.70	294.21	0.27
1400.00	0.50	286.47	1399.98	2.18	-5.05	2.18	5.50	293.34	0.08
1500.00	0.74	298.16	1499.97	2.61	-6.04	2.61	6.58	293.36	0.28
1600.00	0.86	302.18	1599.96	3.32	-7.25	3.32	7.97	294.58	0.13
1700.00	0.50	290.73	1699.96	3.87	-8.29	3.87	9.15	295.02	0.39
1800.00	0.91	305.79	1799.95	4.49	-9.34	4.49	10.36	295.66	0.44
1900.00	0.79	306.84	1899.94	5.36	-10.53	5.36	11.82	296.98	0.12
2000.00	0.66	351.63	1999.93	6.35	-11.17	6.35	12.84	299.61	0.56
2100.00	0.80	40.72	2099.92	7.45	-10.80	7.45	13.12	304.59	0.62
2200.00	0.77	70.23	2199.92	8.20	-9.71	8.20	12.71	310.16	0.40
2300.00	1.02	63.29	2299.90	8.83	-8.29	8.83	12.11	316.81	0.28
2400.00	1.36	17.64	2399.88	10.35	-7.13	10.35	12.57	325.45	0.97
2500.00	1.45	57.30	2499.86	12.16	-5.71	12.16	13.44	334.87	0.96
2600.00	1.92	42.31	2599.81	14.09	-3.51	14.09	14.52	346.00	0.64
2700.00	1.99	33.67	2699.75	16.77	-1.42	16.77	16.83	355.15	0.30
2800.00	1.87	29.72	2799.70	19.63	0.35	19.63	19.63	1.01	0.18
2900.00	1.84	46.68	2899.65	22.15	2.32	22.15	22.27	5.98	0.55
3000.00	2.09	32.53	2999.59	24.78	4.47	24.78	25.18	10.22	0.54
3100.00	2.46	44.17	3099.51	27.86	6.94	27.86	28.71	14.00	0.60
3200.00	2.69	36.24	3199.41	31.29	9.83	31.29	32.80	17.44	0.42
3300.00	2.43	19.28	3299.31	35.19	11.92	35.19	37.15	18.71	0.80
3400.00	1.58	5.38	3399.25	38.57	12.75	38.57	40.62	18.29	0.98

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	0.63	355.40	3499.23	40.48	12.84	40.48	42.47	17.59	0.97
3600.00	0.62	318.52	3599.22	41.43	12.43	41.43	43.26	16.70	0.40
3700.00	0.36	169.31	3699.22	41.53	12.13	41.53	43.26	16.28	0.95
3800.00	1.25	192.57	3799.21	40.15	11.95	40.15	41.89	16.57	0.93
3900.00	1.58	222.74	3899.18	38.08	10.78	38.08	39.57	15.80	0.80
4000.00	1.89	247.58	3999.14	36.44	8.32	36.44	37.38	12.87	0.80
4100.00	2.30	259.22	4099.07	35.44	4.83	35.44	35.77	7.76	0.59
4200.00	2.39	261.67	4198.99	34.76	0.80	34.76	34.77	1.33	0.13
4300.00	2.69	263.74	4298.89	34.20	-3.59	34.20	34.39	354.01	0.32
4400.00	2.47	267.10	4398.79	33.84	-8.08	33.84	34.79	346.57	0.26
4500.00	2.35	267.58	4498.70	33.64	-12.28	33.64	35.82	339.95	0.13
4600.00	2.03	275.77	4598.63	33.74	-16.09	33.74	37.38	334.50	0.44
4700.00	1.70	286.92	4698.57	34.34	-19.27	34.34	39.38	330.70	0.49
4800.00	2.04	292.97	4798.52	35.47	-22.33	35.47	41.91	327.81	0.40
4900.00	2.31	301.09	4898.45	37.20	-25.69	37.20	45.21	325.38	0.41
5000.00	2.59	311.28	4998.36	39.73	-29.11	39.73	49.25	323.77	0.52
5100.00	2.84	312.88	5098.25	42.91	-32.62	42.91	53.90	322.76	0.26
5200.00	2.49	322.35	5198.14	46.32	-35.77	46.32	58.52	322.32	0.56
5300.00	2.15	339.85	5298.06	49.80	-37.74	49.80	62.48	322.84	0.78
5400.00	1.93	346.46	5397.99	53.19	-38.78	53.19	65.83	323.91	0.32
5500.00	1.73	7.09	5497.94	56.32	-38.99	56.32	68.50	325.31	0.68
5600.00	1.76	27.44	5597.90	59.18	-38.09	59.18	70.38	327.23	0.62
5700.00	1.47	45.83	5697.86	61.43	-36.47	61.43	71.44	329.31	0.59
5800.00	0.92	37.84	5797.84	62.96	-35.06	62.96	72.06	330.89	0.57
5900.00	0.97	63.29	5897.82	63.97	-33.81	63.97	72.36	332.14	0.42
6000.00	1.32	52.56	5997.80	65.05	-32.14	65.05	72.56	333.71	0.41
6100.00	1.69	61.06	6097.77	66.47	-29.93	66.47	72.90	335.76	0.43
6200.00	2.55	61.23	6197.70	68.26	-26.68	68.26	73.29	338.65	0.86
6300.00	2.49	64.04	6297.60	70.28	-22.78	70.28	73.88	342.04	0.14
6400.00	2.36	74.42	6397.51	71.78	-18.84	71.78	74.21	345.30	0.46
6500.00	1.44	72.39	6497.46	72.72	-15.66	72.72	74.38	347.85	0.92
6600.00	1.04	89.90	6597.43	73.10	-13.55	73.10	74.35	349.50	0.55
6700.00	1.14	95.17	6697.42	73.01	-11.66	73.01	73.94	350.92	0.14
6800.00	1.18	97.19	6797.40	72.79	-9.65	72.79	73.43	352.45	0.06
6900.00	1.24	101.45	6897.37	72.45	-7.56	72.45	72.84	354.04	0.11
7000.00	1.19	109.19	6997.35	71.89	-5.52	71.89	72.11	355.61	0.17
<div> <div>HORIZONTAL DISPLACEMENT IS</div> <div>72.11 FEET AT 355.61 DEGREES</div> </div>									