



Company: Noble Energy  
 Lease/Well: Mick D / 18-14  
 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: 7/18/2011 / 13:13

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	0.30	26.41	100.00	0.24	0.12	0.24	0.27	26.41	0.30
200.00	0.24	116.43	200.00	0.38	0.42	0.38	0.57	47.54	0.38
300.00	0.26	134.29	300.00	0.14	0.76	0.14	0.78	79.89	0.08
400.00	0.31	338.16	400.00	0.23	0.83	0.23	0.86	74.57	0.55
500.00	0.48	48.12	500.00	0.76	1.04	0.76	1.28	53.94	0.47
600.00	0.85	24.84	599.99	1.71	1.66	1.71	2.38	44.21	0.45
700.00	1.11	21.60	699.97	3.28	2.33	3.28	4.02	35.37	0.27
800.00	1.11	23.05	799.96	5.07	3.07	5.07	5.93	31.14	0.03
900.00	1.04	23.51	899.94	6.80	3.81	6.80	7.79	29.25	0.07
1000.00	1.30	25.48	999.92	8.66	4.66	8.66	9.83	28.28	0.26
1100.00	1.20	30.87	1099.89	10.58	5.68	10.58	12.01	28.24	0.15
1200.00	1.17	31.48	1199.87	12.35	6.75	12.35	14.08	28.67	0.03
1300.00	1.43	27.44	1299.85	14.33	7.86	14.33	16.35	28.75	0.28
1400.00	1.58	26.77	1399.81	16.67	9.06	16.67	18.98	28.52	0.15
1500.00	1.65	25.62	1499.77	19.20	10.30	19.20	21.79	28.22	0.07
1600.00	1.37	22.55	1599.74	21.60	11.38	21.60	24.41	27.79	0.29
1700.00	1.24	25.55	1699.71	23.68	12.31	23.68	26.69	27.47	0.15
1800.00	1.41	29.75	1799.68	25.73	13.39	25.73	29.00	27.49	0.20
1900.00	1.53	24.08	1899.65	28.02	14.54	28.02	31.57	27.44	0.18
2000.00	2.07	29.45	1999.60	30.81	15.98	30.81	34.70	27.41	0.57
2100.00	1.67	41.52	2099.55	33.47	17.83	33.47	37.92	28.04	0.56
2200.00	2.04	42.65	2199.50	35.86	20.00	35.86	41.06	29.14	0.37
2300.00	1.92	42.43	2299.44	38.41	22.33	38.41	44.43	30.17	0.11
2400.00	2.21	39.96	2399.37	41.13	24.71	41.13	47.98	30.99	0.30
2500.00	2.64	42.98	2499.28	44.30	27.52	44.30	52.15	31.85	0.45
2600.00	2.98	45.58	2599.16	47.80	30.95	47.80	56.95	32.92	0.36
2700.00	2.97	40.04	2699.03	51.61	34.47	51.61	62.06	33.74	0.29
2800.00	3.01	39.19	2798.89	55.62	37.79	55.62	67.24	34.20	0.06
2900.00	3.12	40.95	2898.75	59.71	41.23	59.71	72.56	34.63	0.15
3000.00	2.72	30.39	2998.62	63.81	44.22	63.81	77.64	34.72	0.67
3100.00	2.83	39.44	3098.50	67.77	46.99	67.77	82.47	34.74	0.45
3200.00	2.72	34.21	3198.38	71.63	49.89	71.63	87.29	34.86	0.28
3300.00	2.56	39.10	3298.28	75.33	52.63	75.33	91.89	34.94	0.27
3400.00	2.06	46.50	3398.20	78.30	55.34	78.30	95.88	35.25	0.59

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	1.71	41.20	3498.14	80.65	57.63	80.65	99.12	35.55	0.39
3600.00	1.51	43.04	3598.10	82.74	59.51	82.74	101.92	35.72	0.21
3700.00	1.54	21.16	3698.07	84.95	60.89	84.95	104.52	35.63	0.58
3800.00	1.08	14.27	3798.04	87.12	61.61	87.12	106.70	35.27	0.48
3900.00	1.16	4.17	3898.02	89.04	61.92	89.04	108.45	34.81	0.21
4000.00	0.97	11.10	3998.01	90.89	62.15	90.89	110.10	34.37	0.24
4100.00	0.79	14.67	4097.99	92.38	62.49	92.38	111.53	34.08	0.18
4200.00	0.63	7.06	4197.99	93.60	62.73	93.60	112.67	33.83	0.19
4300.00	0.59	7.40	4297.98	94.65	62.87	94.65	113.63	33.59	0.03
4400.00	0.46	359.34	4397.98	95.57	62.93	95.57	114.42	33.36	0.16
4500.00	0.42	33.30	4497.97	96.27	63.13	96.27	115.12	33.25	0.26
4600.00	0.26	90.94	4597.97	96.58	63.55	96.58	115.61	33.35	0.36
4700.00	0.25	150.40	4697.97	96.39	63.89	96.39	115.64	33.54	0.25
4800.00	0.92	250.36	4797.97	95.93	63.24	95.93	114.90	33.40	0.99
4900.00	1.50	226.55	4897.94	94.76	61.54	94.76	112.99	33.00	0.75
5000.00	0.53	238.62	4997.93	93.62	60.19	93.62	111.30	32.74	0.98
5100.00	0.97	247.23	5097.92	93.05	59.01	93.05	110.18	32.38	0.45
5200.00	0.53	209.39	5197.91	92.32	58.01	92.32	109.03	32.14	0.64
5300.00	1.37	205.59	5297.90	90.84	57.26	90.84	107.38	32.23	0.84
5400.00	0.68	205.06	5397.88	89.23	56.50	89.23	105.61	32.34	0.69
5500.00	0.51	211.84	5497.87	88.31	56.01	88.31	104.57	32.38	0.18
5600.00	0.59	133.37	5597.87	87.57	56.15	87.57	104.03	32.67	0.70
5700.00	1.52	146.48	5697.85	86.11	57.26	86.11	103.41	33.62	0.95
5800.00	1.84	153.90	5797.81	83.56	58.70	83.56	102.12	35.09	0.39
5900.00	2.44	167.48	5897.74	80.03	59.87	80.03	99.95	36.80	0.78
6000.00	1.94	187.52	5997.67	76.27	60.11	76.27	97.11	38.24	0.91
6100.00	2.45	209.32	6097.60	72.74	58.84	72.74	93.56	38.97	0.97
6200.00	2.36	227.59	6197.51	69.48	56.27	69.48	89.41	39.00	0.77
6300.00	2.34	244.61	6297.43	67.22	52.91	67.22	85.54	38.21	0.70
6400.00	1.90	228.58	6397.36	65.25	49.82	65.25	82.10	37.37	0.73
6500.00	1.74	256.58	6497.31	63.80	47.10	63.80	79.30	36.44	0.89
6600.00	1.34	288.44	6597.28	63.81	44.51	63.81	77.80	34.90	0.93
6700.00	1.43	270.17	6697.25	64.19	42.16	64.19	76.79	33.30	0.45
6800.00	1.63	248.63	6797.21	63.67	39.59	63.67	74.98	31.87	0.60
6900.00	1.80	223.46	6897.17	62.01	37.18	62.01	72.31	30.95	0.77
7000.00	1.73	200.42	6997.12	59.46	35.58	59.46	69.29	30.89	0.71
HORIZONTAL DISPLACEMENT IS 69.29 FEET AT 30.89 DEGREES									