



Company: Noble Energy
Lease/Well: Mick D / 18-11
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: 6/25/2011 / 23:35

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	0.30	300.74	100.00	0.13	-0.22	0.13	0.26	300.74	0.30
200.00	0.18	301.56	200.00	0.35	-0.58	0.35	0.67	300.93	0.12
300.00	0.28	281.01	300.00	0.47	-0.95	0.47	1.06	296.58	0.13
400.00	0.13	253.59	400.00	0.49	-1.29	0.49	1.38	290.64	0.17
500.00	0.19	291.58	500.00	0.52	-1.56	0.52	1.64	288.32	0.12
600.00	0.28	285.24	600.00	0.64	-1.96	0.64	2.06	288.22	0.09
700.00	0.31	279.48	699.99	0.75	-2.46	0.75	2.58	287.02	0.04
800.00	0.21	304.00	799.99	0.90	-2.88	0.90	3.02	287.35	0.15
900.00	0.11	351.71	899.99	1.10	-3.05	1.10	3.24	289.77	0.16
1000.00	0.24	288.34	999.99	1.25	-3.26	1.25	3.49	291.04	0.22
1100.00	0.26	307.12	1099.99	1.46	-3.64	1.46	3.92	291.82	0.08
1200.00	0.18	292.60	1199.99	1.66	-3.97	1.66	4.30	292.65	0.10
1300.00	0.14	274.02	1299.99	1.73	-4.24	1.73	4.58	292.17	0.07
1400.00	0.47	251.30	1399.99	1.60	-4.74	1.60	5.01	288.69	0.34
1500.00	0.82	282.93	1499.98	1.63	-5.82	1.63	6.05	285.67	0.49
1600.00	0.53	287.51	1599.98	1.93	-6.97	1.93	7.23	285.52	0.29
1700.00	0.66	268.97	1699.97	2.06	-7.99	2.06	8.25	284.49	0.23
1800.00	0.64	284.64	1799.96	2.19	-9.11	2.19	9.37	283.55	0.18
1900.00	0.21	125.91	1899.96	2.23	-9.50	2.23	9.76	283.20	0.84
2000.00	1.01	103.35	1999.96	1.92	-8.49	1.92	8.70	282.72	0.82
2100.00	1.06	128.62	2099.94	1.14	-6.91	1.14	7.00	279.35	0.45
2200.00	1.42	129.78	2199.92	-0.23	-5.24	-0.23	5.24	267.49	0.36
2300.00	1.47	127.18	2299.89	-1.80	-3.26	-1.80	3.72	241.12	0.09
2400.00	2.00	131.83	2399.84	-3.74	-0.94	-3.74	3.86	194.04	0.54
2500.00	2.70	126.55	2499.75	-6.31	2.26	-6.31	6.70	160.29	0.74
2600.00	3.48	124.13	2599.61	-9.41	6.66	-9.41	11.53	144.71	0.78
2700.00	3.90	126.81	2699.40	-13.15	11.89	-13.15	17.73	137.87	0.46
2800.00	4.01	123.07	2799.16	-17.10	17.55	-17.10	24.50	134.25	0.28
2900.00	3.19	128.33	2898.96	-20.73	22.66	-20.73	30.71	132.45	0.89
3000.00	2.32	131.00	2998.85	-23.78	26.37	-23.78	35.51	132.05	0.88
3100.00	1.50	127.71	3098.79	-25.91	28.93	-25.91	38.84	131.85	0.82
3200.00	0.74	161.60	3198.77	-27.33	30.17	-27.33	40.71	132.17	0.97
3300.00	0.30	64.73	3298.77	-27.83	30.61	-27.83	41.37	132.27	0.84
3400.00	0.08	146.31	3398.77	-27.78	30.89	-27.78	41.54	131.96	0.30

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	0.32	219.42	3498.77	-28.05	30.75	-28.05	41.63	132.37	0.31
3600.00	0.26	232.27	3598.77	-28.41	30.40	-28.41	41.61	133.06	0.09
3700.00	0.36	289.27	3698.77	-28.44	29.92	-28.44	41.28	133.55	0.31
3800.00	0.34	211.22	3798.77	-28.59	29.47	-28.59	41.06	134.13	0.44
3900.00	0.15	219.89	3898.76	-28.94	29.24	-28.94	41.14	134.71	0.19
4000.00	0.16	58.65	3998.76	-28.97	29.28	-28.97	41.19	134.70	0.30
4100.00	0.52	199.94	4098.76	-29.32	29.24	-29.32	41.41	135.08	0.65
4200.00	0.52	207.48	4198.76	-30.14	28.88	-30.14	41.74	136.23	0.07
4300.00	0.84	222.54	4298.75	-31.08	28.17	-31.08	41.95	137.81	0.37
4400.00	0.80	212.43	4398.74	-32.22	27.30	-32.22	42.23	139.72	0.15
4500.00	0.83	199.46	4498.73	-33.49	26.69	-33.49	42.82	141.45	0.19
4600.00	1.12	202.70	4598.72	-35.08	26.07	-35.08	43.70	143.38	0.30
4700.00	1.64	198.85	4698.69	-37.34	25.22	-37.34	45.06	145.96	0.53
4800.00	2.50	205.37	4798.62	-40.66	23.83	-40.66	47.13	149.63	0.88
4900.00	2.77	205.08	4898.52	-44.82	21.87	-44.82	49.87	153.99	0.27
5000.00	2.46	215.61	4998.41	-48.75	19.60	-48.75	52.54	158.10	0.57
5100.00	1.83	225.13	5098.34	-51.62	17.22	-51.62	54.41	161.55	0.72
5200.00	0.87	232.10	5198.31	-53.21	15.49	-53.21	55.42	163.77	0.96
5300.00	0.74	233.37	5298.30	-54.06	14.38	-54.06	55.94	165.11	0.14
5400.00	0.54	161.46	5398.30	-54.89	14.01	-54.89	56.64	165.68	0.76
5500.00	0.54	176.75	5498.29	-55.79	14.18	-55.79	57.57	165.74	0.14
5600.00	0.37	51.85	5598.29	-56.06	14.46	-56.06	57.90	165.53	0.81
5700.00	0.77	71.29	5698.29	-55.65	15.35	-55.65	57.73	164.58	0.44
5800.00	0.31	0.86	5798.28	-55.16	15.99	-55.16	57.43	163.83	0.73
5900.00	0.64	9.82	5898.28	-54.34	16.09	-54.34	56.67	163.50	0.34
6000.00	0.93	325.29	5998.27	-53.12	15.73	-53.12	55.40	163.51	0.65
6100.00	0.56	313.30	6098.26	-52.12	14.91	-52.12	54.21	164.04	0.39
6200.00	1.16	304.72	6198.25	-51.21	13.72	-51.21	53.01	165.00	0.61
6300.00	0.75	339.39	6298.24	-50.01	12.65	-50.01	51.59	165.80	0.69
6400.00	1.36	323.28	6398.22	-48.45	11.71	-48.45	49.84	166.41	0.67
6500.00	1.33	313.70	6498.19	-46.69	10.16	-46.69	47.79	167.73	0.23
6600.00	1.64	314.00	6598.16	-44.90	8.29	-44.90	45.66	169.54	0.31
6700.00	1.94	319.96	6698.11	-42.61	6.17	-42.61	43.05	171.76	0.35
6800.00	2.77	324.29	6798.03	-39.35	3.67	-39.35	39.52	174.67	0.85
6900.00	3.06	324.38	6897.90	-35.22	0.71	-35.22	35.23	178.84	0.28
7000.00	3.04	329.28	6997.75	-30.77	-2.20	-30.77	30.85	184.08	0.26
<div> <div></div> <div> HORIZONTAL DISPLACEMENT IS 30.85 FEET AT 184.08 DEGREES </div> </div>									