



Company: Noble
 Lease/Well: MCWilliams/D29-32
 Location:
 Rig Name: Production
 State/County: Colorado/Weld County
 Latitude: 40.18
 GRID North is 0.59 Degrees East of True North
 VS-Azi: 0.00 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : GL

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: run1-01_ed.ut
 Minimum Curvature Method
 Report Date/Time: 3/30/2011 / 19:08

Vaughn Energy Services
 Rifle, Colorado
 970-456-2071
 Garry Fowler
 MCWilliams D29-32/05-123-25426

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	0.16	80.78	100.00	0.02	0.13	0.02	0.14	80.78	0.16
200.00	0.13	79.37	200.00	0.06	0.38	0.06	0.39	80.37	0.03
300.00	0.16	86.34	300.00	0.09	0.63	0.09	0.64	81.50	0.04
400.00	0.17	89.93	400.00	0.10	0.92	0.10	0.93	83.60	0.02
500.00	0.28	88.45	500.00	0.11	1.32	0.11	1.32	85.21	0.10
600.00	0.48	137.54	600.00	-0.20	1.84	-0.20	1.85	96.04	0.37
700.00	0.58	138.31	699.99	-0.89	2.47	-0.89	2.62	109.74	0.10
800.00	0.57	140.48	799.99	-1.65	3.12	-1.65	3.53	117.83	0.02
900.00	0.65	138.08	899.98	-2.45	3.81	-2.45	4.53	122.73	0.08
1000.00	0.68	138.59	999.97	-3.32	4.58	-3.32	5.66	125.89	0.03
1100.00	0.67	139.65	1099.97	-4.21	5.35	-4.21	6.81	128.16	0.01
1200.00	0.64	127.25	1199.96	-4.99	6.18	-4.99	7.95	128.94	0.15
1300.00	0.67	124.69	1299.95	-5.67	7.11	-5.67	9.09	128.56	0.04
1400.00	0.56	128.41	1399.95	-6.30	7.97	-6.30	10.17	128.33	0.12
1500.00	0.50	122.49	1499.94	-6.84	8.73	-6.84	11.09	128.10	0.08
1600.00	0.41	113.56	1599.94	-7.22	9.42	-7.22	11.87	127.47	0.12
1700.00	0.35	74.09	1699.94	-7.28	10.04	-7.28	12.40	125.94	0.26
1800.00	0.44	28.62	1799.94	-6.86	10.52	-6.86	12.56	123.12	0.31
1900.00	0.58	29.07	1899.93	-6.08	10.95	-6.08	12.52	119.07	0.14
2000.00	0.64	34.31	1999.93	-5.18	11.51	-5.18	12.62	114.25	0.08
2100.00	0.68	35.38	2099.92	-4.24	12.16	-4.24	12.88	109.22	0.04
2200.00	0.72	33.48	2199.91	-3.23	12.85	-3.23	13.25	104.11	0.05
2300.00	0.93	31.78	2299.90	-2.02	13.63	-2.02	13.78	98.42	0.20
2400.00	0.86	61.53	2399.89	-0.97	14.71	-0.97	14.74	93.78	0.46
2500.00	0.76	81.54	2499.88	-0.52	16.02	-0.52	16.03	91.86	0.30
2600.00	0.50	86.69	2599.88	-0.40	17.11	-0.40	17.11	91.33	0.26
2700.00	0.46	76.06	2699.87	-0.28	17.94	-0.28	17.94	90.88	0.10
2800.00	0.27	15.94	2799.87	0.05	18.40	0.05	18.40	89.86	0.40
2900.00	0.21	323.33	2899.87	0.41	18.35	0.41	18.36	88.71	0.22
3000.00	0.70	317.23	2999.87	1.01	17.83	1.01	17.86	86.77	0.49
3100.00	0.91	316.95	3099.86	2.04	16.87	2.04	16.99	83.12	0.21

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
3200.00	1.26	326.75	3199.84	3.54	15.72	3.54	16.12	77.32	0.40
3300.00	1.94	337.67	3299.80	6.02	14.48	6.02	15.68	67.41	0.74
3400.00	1.77	332.16	3399.75	8.95	13.12	8.95	15.88	55.69	0.25
3500.00	1.75	338.63	3499.70	11.74	11.84	11.74	16.67	45.25	0.20
3600.00	1.47	356.62	3599.66	14.44	11.21	14.44	18.28	37.81	0.58
3700.00	1.06	354.99	3699.64	16.65	11.05	16.65	19.98	33.57	0.41
3800.00	0.70	359.49	3799.62	18.19	10.96	18.19	21.24	31.08	0.37
3900.00	0.80	12.31	3899.61	19.49	11.11	19.49	22.43	29.68	0.20
4000.00	0.71	12.85	3999.61	20.78	11.39	20.78	23.70	28.74	0.09
4100.00	0.67	18.84	4099.60	21.94	11.72	21.94	24.88	28.11	0.08
4200.00	0.62	20.08	4199.59	23.00	12.10	23.00	25.99	27.74	0.06
4300.00	0.51	40.51	4299.59	23.85	12.57	23.85	26.96	27.80	0.23
4400.00	0.49	41.21	4399.58	24.51	13.14	24.51	27.81	28.20	0.02
4500.00	0.41	47.49	4499.58	25.07	13.69	25.07	28.56	28.63	0.09
4600.00	0.48	184.14	4599.58	24.89	13.92	24.89	28.52	29.21	0.82
4700.00	1.16	199.84	4699.57	23.53	13.55	23.53	27.15	29.93	0.71
4800.00	2.13	198.40	4799.53	20.82	12.62	20.82	24.34	31.22	0.97
4900.00	2.50	191.76	4899.45	16.92	11.59	16.92	20.51	34.40	0.46
5000.00	2.20	186.92	4999.36	12.88	10.91	12.88	16.88	40.27	0.36
5100.00	1.64	188.42	5099.30	9.56	10.47	9.56	14.18	47.61	0.57
5200.00	0.98	180.07	5199.28	7.29	10.26	7.29	12.59	54.59	0.68
5300.00	0.54	164.59	5299.27	5.99	10.38	5.99	11.99	60.03	0.48
5400.00	0.54	145.18	5399.26	5.15	10.78	5.15	11.94	64.44	0.18
5500.00	0.43	145.62	5499.26	4.46	11.26	4.46	12.11	68.41	0.10
5600.00	0.48	141.05	5599.26	3.82	11.73	3.82	12.34	71.97	0.06
5700.00	0.71	74.98	5699.25	3.66	12.59	3.66	13.11	73.82	0.68
5800.00	0.81	61.93	5799.24	4.15	13.82	4.15	14.42	73.29	0.20
5900.00	0.89	61.84	5899.23	4.84	15.12	4.84	15.87	72.24	0.08
6000.00	0.97	61.59	5999.22	5.61	16.55	5.61	17.47	71.26	0.09
6100.00	1.01	65.46	6099.21	6.38	18.09	6.38	19.18	70.57	0.07
6200.00	1.25	66.68	6199.19	7.18	19.89	7.18	21.15	70.16	0.25
6300.00	1.40	76.73	6299.16	7.89	22.09	7.89	23.46	70.34	0.28
6400.00	1.47	86.01	6399.13	8.26	24.56	8.26	25.92	71.41	0.24
6500.00	1.57	96.38	6499.09	8.20	27.21	8.20	28.42	73.23	0.29
6600.00	1.63	100.38	6599.05	7.79	29.97	7.79	30.96	75.42	0.13
6700.00	1.49	107.10	6699.02	7.15	32.61	7.15	33.38	77.62	0.23
6800.00	1.47	104.97	6798.98	6.44	35.09	6.44	35.68	79.60	0.06
6900.00	1.19	108.62	6898.96	5.78	37.32	5.78	37.76	81.20	0.30
7000.00	1.04	114.72	6998.94	5.07	39.12	5.07	39.45	82.62	0.19
HORIZONTAL DISPLACEMENT IS 39.45 FEET AT 82.62 DEGREES									