



Company: Noble Energy  
Well: UPRC 23-1217  
API: 05-123-17989  
Rig Name: Production/ Lightning Wireline  
State/County: Colorado/Weld  
Latitude: 40.296, Longitude: -104.865  
GRID North is 0.410 Degrees East of True North  
VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB=Ground Level

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro\_run01-01\_ed.ut

Minimum Curvature Method

Report Date/Time: 10/4/2012 / 17:39

Vaughn Energy Services  
Henderson, CO  
303-853-4976  
Levi Sheldon

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
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	****
100.000	0.247	175.044	100.000	-0.215	0.019	-0.215	0.216	175.044	0.247
200.000	0.145	206.673	199.999	-0.543	-0.019	-0.543	0.543	182.045	0.145
300.000	0.276	190.084	299.998	-0.893	-0.118	-0.893	0.901	187.543	0.143
400.000	0.476	273.053	399.997	-1.108	-0.575	-1.108	1.248	207.445	0.520
500.000	0.171	38.377	499.996	-0.968	-0.897	-0.968	1.320	222.820	0.592
600.000	0.389	2.951	599.995	-0.512	-0.787	-0.512	0.939	236.951	0.269
700.000	0.416	4.757	699.992	0.189	-0.739	0.189	0.763	284.317	0.030
800.000	0.397	0.148	799.990	0.897	-0.708	0.897	1.143	321.694	0.038
900.000	0.356	32.206	899.988	1.507	-0.542	1.507	1.601	340.222	0.212
1000.000	0.334	334.357	999.986	2.033	-0.502	2.033	2.094	346.124	0.335
1100.000	0.502	344.011	1099.983	2.717	-0.749	2.717	2.818	344.587	0.182
1200.000	0.618	18.532	1199.979	3.650	-0.698	3.650	3.716	349.169	0.350
1300.000	0.980	328.876	1299.970	4.893	-0.969	4.893	4.988	348.802	0.747
1400.000	1.253	344.834	1399.951	6.680	-1.697	6.680	6.892	345.750	0.411
1500.000	0.974	12.147	1499.933	8.566	-1.804	8.566	8.754	348.110	0.591
1600.000	0.908	50.092	1599.920	9.905	-1.017	9.905	9.958	354.139	0.615
1700.000	1.342	35.991	1699.901	11.362	0.279	11.362	11.365	1.409	0.512
1800.000	1.240	20.615	1799.876	13.322	1.349	13.322	13.390	5.781	0.360
1900.000	1.014	6.695	1899.857	15.214	1.833	15.214	15.324	6.870	0.353
2000.000	0.898	33.667	1999.843	16.746	2.371	16.746	16.913	8.058	0.460
2100.000	1.165	52.667	2099.827	18.014	3.613	18.014	18.373	11.341	0.430
2200.000	1.081	33.733	2199.808	19.415	4.945	19.415	20.034	14.289	0.378
2300.000	1.292	49.615	2299.787	20.929	6.327	20.929	21.865	16.821	0.389
2400.000	1.364	36.377	2399.760	22.618	7.892	22.618	23.955	19.235	0.314
2500.000	1.768	51.430	2499.723	24.538	9.804	24.538	26.424	21.779	0.574
2600.000	2.125	46.385	2599.666	26.778	12.352	26.778	29.490	24.763	0.395
2700.000	2.429	38.265	2699.587	29.721	15.006	29.721	33.294	26.790	0.442
2800.000	2.339	34.465	2799.500	33.067	17.473	33.067	37.400	27.853	0.181
2900.000	2.640	50.417	2899.407	36.217	20.403	36.217	41.569	29.395	0.752
3000.000	2.762	63.671	2999.297	38.753	24.337	38.753	45.761	32.129	0.635
3100.000	2.810	81.815	3099.181	40.170	28.923	40.170	49.499	35.754	0.879
3200.000	2.960	98.246	3199.056	40.149	33.904	40.149	52.549	40.179	0.837
3300.000	3.207	101.382	3298.911	39.227	39.202	39.227	55.457	44.982	0.299
3400.000	3.206	103.417	3398.754	38.026	44.664	38.026	58.659	49.590	0.114

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
3500.000	2.882	89.303	3498.614	37.407	49.899	37.407	62.363	53.142	0.814
3600.000	2.938	71.343	3598.488	38.258	54.841	38.258	66.867	55.100	0.910
3700.000	2.316	87.524	3698.383	39.165	59.289	39.165	71.057	56.552	0.962
3800.000	2.146	83.702	3798.308	39.458	63.168	39.458	74.479	58.009	0.226
3900.000	1.895	82.902	3898.245	39.867	66.670	39.867	77.680	59.121	0.252
4000.000	2.086	64.934	3998.186	40.843	69.959	40.843	81.008	59.723	0.650
4100.000	1.808	79.275	4098.129	41.907	73.157	41.907	84.310	60.194	0.559
4200.000	1.767	74.869	4198.080	42.603	76.196	42.603	87.298	60.789	0.143
4300.000	1.276	87.724	4298.045	43.050	78.797	43.050	89.790	61.350	0.596
4400.000	1.010	61.166	4398.025	43.520	80.682	43.520	91.671	61.658	0.585
4500.000	0.931	53.529	4498.011	44.428	82.107	44.428	93.357	61.582	0.152
4600.000	0.756	41.146	4598.000	45.408	83.195	45.408	94.780	61.374	0.252
4700.000	0.812	29.353	4697.991	46.522	83.976	46.522	96.002	61.014	0.170
4800.000	0.803	21.096	4797.981	47.793	84.576	47.793	97.145	60.530	0.117
4900.000	0.899	9.566	4897.970	49.220	84.958	49.220	98.186	59.914	0.196
5000.000	0.430	5.972	4997.963	50.367	85.128	50.367	98.912	59.389	0.471
5100.000	0.587	334.665	5097.959	51.203	84.947	51.203	99.186	58.920	0.314
5200.000	0.518	321.588	5197.955	52.020	84.447	52.020	99.184	58.367	0.144
5300.000	0.445	277.765	5297.952	52.427	83.782	52.427	98.833	57.964	0.366
5400.000	1.127	290.850	5397.942	52.829	82.478	52.829	97.947	57.359	0.701
5500.000	1.446	273.447	5497.917	53.255	80.299	53.255	96.354	56.447	0.501
5600.000	1.311	236.282	5597.890	52.696	78.089	52.696	94.206	55.988	0.888
5700.000	1.126	245.634	5697.867	51.656	76.242	51.656	92.093	55.881	0.271
5800.000	0.697	244.571	5797.854	50.989	74.798	50.989	90.524	55.718	0.429
5900.000	0.949	281.942	5897.845	50.899	73.438	50.899	89.353	55.274	0.579
6000.000	0.857	273.685	5997.832	51.119	71.881	51.119	88.205	54.581	0.159
6100.000	0.986	286.469	6097.819	51.411	70.310	51.411	87.101	53.825	0.242
6200.000	0.803	318.448	6197.808	52.179	69.020	52.179	86.524	52.911	0.523
6300.000	0.864	332.992	6297.797	53.375	68.213	53.375	86.613	51.958	0.219
6400.000	0.430	344.162	6397.791	54.407	67.768	54.407	86.906	51.241	0.450
6500.000	1.194	329.218	6497.780	55.663	67.133	55.663	87.207	50.336	0.786
6600.000	1.289	297.767	6597.758	57.081	65.605	57.081	86.961	48.974	0.679
6700.000	1.214	320.485	6697.734	58.422	63.935	58.422	86.608	47.580	0.498
6800.000	0.984	310.953	6797.716	59.803	62.613	59.803	86.584	46.315	0.293
6900.000	1.320	311.478	6897.696	61.128	61.101	61.128	86.429	44.987	0.336
7000.000	1.294	318.379	6997.670	62.735	59.488	62.735	86.456	43.478	0.159
7100.000	0.807	291.686	7097.653	63.840	58.083	63.840	86.309	42.297	0.678
7200.000	0.550	276.057	7197.646	64.151	56.951	64.151	85.783	41.598	0.315

HORIZONTAL DISPLACEMENT IS 85.783 FEET AT 41.598 DEGREES									
---	--	--	--	--	--	--	--	--	--