



COMPANY/RIG: Noble Energy/Production/Coretech
WELL: Mark 35-15
DECLINATION: 8.36
TD AS DRILLED: 7256
COUNTY/STATE: Weld/Colorado
Latitude: 40.273, Longitude: -104.625
GRID North is 0.570 Degrees East of True North
VS-Azi: 0.000 Degrees



DEPTH REFERENCE : RKB = GL Elevation = 4761

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 8/14/2014 / 10:37

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

SURVEYOR: JUSTIN WILLIAMS

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	0.657	58.174	99.998	0.302	0.487	0.302	0.573	58.174	0.657
200.000	0.814	50.640	199.990	1.055	1.523	1.055	1.853	55.292	0.185
300.000	0.843	44.613	299.979	2.029	2.589	2.029	3.290	51.913	0.092
400.000	0.442	62.797	399.973	2.729	3.449	2.729	4.399	51.645	0.445
500.000	0.472	34.965	499.970	3.243	4.029	3.243	5.172	51.164	0.222
600.000	0.351	3.408	599.967	3.886	4.283	3.886	5.783	47.780	0.252
700.000	0.283	133.441	699.966	4.021	4.480	4.021	6.020	48.090	0.575
800.000	0.075	160.444	799.966	3.789	4.682	3.789	6.023	51.013	0.219
900.000	0.510	202.679	899.964	3.316	4.532	3.316	5.616	53.804	0.457
1000.000	0.534	206.120	999.960	2.487	4.155	2.487	4.843	59.095	0.039
1100.000	0.148	252.311	1099.958	2.030	3.827	2.030	4.332	62.060	0.444
1200.000	0.164	223.042	1199.958	1.886	3.606	1.886	4.069	62.395	0.081
1300.000	0.131	149.216	1299.958	1.682	3.567	1.682	3.944	64.751	0.180
1400.000	0.354	172.151	1399.957	1.278	3.668	1.278	3.884	70.790	0.238
1500.000	0.208	243.353	1499.956	0.891	3.548	0.891	3.658	75.903	0.348
1600.000	0.229	230.303	1599.955	0.682	3.232	0.682	3.303	78.085	0.054
1700.000	0.296	128.130	1699.955	0.395	3.282	0.395	3.305	83.144	0.411
1800.000	0.199	349.477	1799.954	0.405	3.453	0.405	3.477	83.308	0.464
1900.000	0.301	57.882	1899.953	0.715	3.645	0.715	3.714	78.894	0.294

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
2000.000	1.096	98.006	1999.946	0.722	4.815	0.722	4.869	81.471	0.887
2100.000	1.116	105.156	2099.927	0.334	6.702	0.334	6.710	87.145	0.139
2200.000	1.377	117.381	2199.903	-0.473	8.709	-0.473	8.722	93.109	0.371
2300.000	1.391	88.909	2299.875	-1.003	10.990	-1.003	11.035	95.213	0.681
2400.000	0.757	50.155	2399.858	-0.556	12.711	-0.556	12.723	92.505	0.930
2500.000	0.212	230.748	2499.856	-0.250	13.075	-0.250	13.077	91.094	0.969
2600.000	0.911	206.535	2599.851	-1.078	12.577	-1.078	12.623	94.898	0.723
2700.000	0.812	237.250	2699.840	-2.173	11.625	-2.173	11.827	100.585	0.466
2800.000	0.643	243.488	2799.832	-2.807	10.527	-2.807	10.895	104.928	0.186
2900.000	0.711	201.934	2899.826	-3.633	9.793	-3.633	10.445	110.354	0.485
3000.000	0.355	237.545	2999.821	-4.375	9.299	-4.375	10.277	115.196	0.471
3100.000	0.660	228.461	3099.817	-4.923	8.607	-4.923	9.916	119.769	0.314
3200.000	0.503	257.026	3199.812	-5.403	7.748	-5.403	9.446	124.890	0.325
3300.000	0.377	258.352	3299.809	-5.568	6.999	-5.568	8.944	128.506	0.127
3400.000	0.788	257.053	3399.804	-5.789	6.007	-5.789	8.342	133.939	0.411
3500.000	0.639	291.100	3499.797	-5.742	4.817	-5.742	7.495	140.007	0.441
3600.000	0.533	295.893	3599.791	-5.338	3.878	-5.338	6.598	144.002	0.116
3700.000	0.523	313.797	3699.787	-4.819	3.130	-4.819	5.746	146.997	0.165
3800.000	0.918	348.740	3799.780	-3.717	2.644	-3.717	4.562	144.580	0.573
3900.000	0.747	328.958	3899.769	-2.373	2.151	-2.373	3.203	137.812	0.332
4000.000	1.053	351.032	3999.757	-0.906	1.671	-0.906	1.901	118.473	0.457
4100.000	1.281	349.317	4099.736	1.100	1.321	1.100	1.719	50.221	0.230
4200.000	1.387	1.969	4199.709	3.408	1.155	3.408	3.598	18.730	0.312
4300.000	1.706	334.849	4299.674	5.965	0.564	5.965	5.991	5.404	0.789
4400.000	1.896	336.751	4399.625	8.832	-0.721	8.832	8.861	355.331	0.199
4500.000	1.645	332.391	4499.577	11.623	-2.039	11.623	11.801	350.049	0.285
4600.000	1.157	322.486	4599.547	13.696	-3.319	13.696	14.092	346.377	0.543
4700.000	0.394	280.095	4699.537	14.557	-4.272	14.557	15.171	343.643	0.905
4800.000	1.064	231.911	4799.530	14.044	-5.342	14.044	15.026	339.175	0.853
4900.000	1.011	223.839	4899.513	12.835	-6.683	12.835	14.471	332.493	0.155
5000.000	0.940	212.660	4999.499	11.508	-7.737	11.508	13.867	326.088	0.203
5100.000	1.092	229.083	5099.483	10.194	-8.899	10.194	13.532	318.879	0.327
5200.000	1.360	248.119	5199.461	9.128	-10.721	9.128	14.080	310.413	0.484
5300.000	1.694	275.536	5299.426	8.828	-13.293	8.828	15.957	303.589	0.793
5400.000	1.675	304.912	5399.385	9.807	-15.963	9.807	18.735	301.566	0.854
5500.000	1.982	276.803	5499.336	10.849	-18.879	10.849	21.774	299.885	0.936
5600.000	2.771	277.752	5599.249	11.380	-22.990	11.380	25.653	296.334	0.790
5700.000	2.689	268.969	5699.136	11.663	-27.731	11.663	30.084	292.811	0.426
5800.000	1.811	265.035	5799.058	11.485	-31.651	11.485	33.670	289.943	0.892
5900.000	0.824	262.455	5899.030	11.253	-33.938	11.253	35.755	288.345	0.988

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
6000.000	0.365	180.700	5999.026	10.840	-34.654	10.840	36.310	287.370	0.852
6100.000	0.962	179.867	6099.019	9.682	-34.656	9.682	35.983	285.609	0.597
6200.000	0.634	176.875	6199.009	8.290	-34.624	8.290	35.603	283.465	0.331
6300.000	0.298	208.027	6299.006	7.509	-34.716	7.509	35.519	282.204	0.409
6400.000	0.284	245.892	6399.005	7.178	-35.065	7.178	35.792	281.568	0.189
6500.000	0.427	163.156	6499.003	6.720	-35.183	6.720	35.819	280.813	0.482
6600.000	0.315	144.172	6599.001	6.140	-34.914	6.140	35.450	279.974	0.165
6700.000	0.569	161.594	6698.998	5.446	-34.596	5.446	35.022	278.946	0.285
6800.000	0.158	310.748	6798.997	5.065	-34.544	5.065	34.913	278.342	0.709