



Company/Rig: Noble Energy/ CoreTech
WELL/API#: GWAA 3-15/05-123-26989
DECLINATION: 8.33 Degrees
TD AS DRILLED: 7127 Feet
COUNTY/STATE: Weld/Colorado
Latitude: 40.432, Longitude: -104.644
GRID North is 0.550 Degrees East of True North
VS-Azi: 0.000 Degrees



DEPTH REFERENCE : RKB=GL/ ELEVATION= 4659 Feet

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 1/12/2015 / 14:10

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: Sean Bratt

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	0.812	355.694	99.997	0.707	-0.053	0.707	0.709	355.694	0.812
200.000	0.849	12.500	199.986	2.137	0.054	2.137	2.137	1.447	0.246
300.000	1.502	11.064	299.965	4.146	0.466	4.146	4.173	6.411	0.654
400.000	1.556	10.729	399.929	6.766	0.970	6.766	6.836	8.159	0.054
500.000	1.144	28.996	499.902	8.973	1.707	8.973	9.134	10.769	0.591
600.000	1.412	28.112	599.877	10.933	2.771	10.933	11.278	14.223	0.270
700.000	1.525	16.255	699.844	13.298	3.724	13.298	13.809	15.646	0.324
800.000	1.676	7.391	799.805	16.025	4.285	16.025	16.588	14.970	0.289
900.000	1.853	7.003	899.758	19.081	4.670	19.081	19.644	13.753	0.178
1000.000	2.203	352.514	999.696	22.591	4.617	22.591	23.058	11.551	0.618
1100.000	1.912	339.208	1099.632	26.056	3.775	26.056	26.328	8.243	0.557
1200.000	2.116	347.223	1199.570	29.416	2.774	29.416	29.546	5.387	0.348
1300.000	2.255	344.890	1299.497	33.116	1.853	33.116	33.168	3.202	0.165
1400.000	2.251	350.554	1399.420	36.953	1.018	36.953	36.967	1.578	0.223
1500.000	2.448	345.261	1499.336	40.955	0.152	40.955	40.956	0.213	0.293
1600.000	2.276	348.443	1599.251	44.966	-0.789	44.966	44.973	358.995	0.216
1700.000	2.120	353.064	1699.177	48.747	-1.410	48.747	48.767	358.343	0.236
1800.000	2.020	352.897	1799.112	52.332	-1.851	52.332	52.365	357.974	0.100
1900.000	1.684	348.906	1899.060	55.523	-2.352	55.523	55.573	357.574	0.360

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	1.151	345.518	1999.029	57.938	-2.886	57.938	58.010	357.148	0.540
2100.000	1.017	333.795	2099.011	59.706	-3.529	59.706	59.810	356.617	0.258
2200.000	1.391	311.032	2198.989	61.299	-4.836	61.299	61.489	355.489	0.600
2300.000	2.255	299.401	2298.938	63.061	-7.466	63.061	63.502	353.248	0.936
2400.000	2.343	305.783	2398.858	65.223	-10.838	65.223	66.117	350.565	0.271
2500.000	1.638	301.884	2498.797	67.173	-13.710	67.173	68.558	348.464	0.718
2600.000	1.241	305.733	2598.765	68.560	-15.803	68.560	70.358	347.020	0.409
2700.000	1.182	279.092	2698.744	69.355	-17.700	69.355	71.578	345.683	0.561
2800.000	0.801	294.588	2798.729	69.809	-19.355	69.809	72.443	344.504	0.462
2900.000	0.774	277.561	2898.719	70.189	-20.660	70.189	73.167	343.598	0.235
3000.000	0.762	289.141	2998.710	70.496	-21.958	70.496	73.837	342.699	0.155
3100.000	0.648	313.689	3098.703	71.105	-22.995	71.105	74.730	342.079	0.320
3200.000	0.228	306.414	3198.700	71.613	-23.564	71.613	75.391	341.786	0.422
3300.000	0.237	149.644	3298.700	71.553	-23.620	71.553	75.351	341.732	0.456
3400.000	0.279	144.057	3398.699	71.177	-23.372	71.177	74.916	341.822	0.049
3500.000	0.312	66.852	3498.698	71.087	-22.979	71.087	74.709	342.087	0.370
3600.000	0.720	50.241	3598.693	71.596	-22.245	71.596	74.972	342.740	0.431
3700.000	0.669	62.528	3698.686	72.267	-21.244	72.267	75.325	343.618	0.157
3800.000	0.805	63.279	3798.678	72.852	-20.099	72.852	75.574	344.577	0.137
3900.000	0.912	50.357	3898.667	73.676	-18.859	73.676	76.051	345.642	0.220
4000.000	1.459	48.665	3998.645	75.024	-17.291	75.024	76.990	347.022	0.548
4100.000	1.796	41.392	4098.605	77.040	-15.299	77.040	78.544	348.768	0.395
4200.000	1.734	45.089	4198.557	79.283	-13.192	79.283	80.373	350.553	0.130
4300.000	2.339	44.656	4298.494	81.803	-10.686	81.803	82.498	352.557	0.605
4400.000	1.831	42.886	4398.427	84.425	-8.164	84.425	84.819	354.476	0.512
4500.000	1.578	41.195	4498.383	86.632	-6.170	86.632	86.852	355.926	0.258
4600.000	0.864	52.271	4598.359	88.129	-4.667	88.129	88.253	356.969	0.749
4700.000	0.337	58.334	4698.354	88.745	-3.821	88.745	88.827	357.535	0.530
4800.000	0.819	67.152	4798.348	89.177	-2.912	89.177	89.224	358.130	0.488
4900.000	1.428	29.067	4898.330	90.543	-1.648	90.543	90.558	358.957	0.932
5000.000	1.623	18.534	4998.295	92.975	-0.593	92.975	92.977	359.635	0.341
5100.000	2.152	30.170	5098.240	95.941	0.801	95.941	95.944	0.478	0.651
5200.000	1.790	27.225	5198.181	98.953	2.459	98.953	98.983	1.423	0.375
5300.000	1.027	17.520	5298.150	101.196	3.443	101.196	101.255	1.949	0.797
5400.000	0.545	318.992	5398.142	102.409	3.401	102.409	102.466	1.902	0.876
5500.000	1.061	261.879	5498.133	102.637	2.172	102.637	102.660	1.212	0.891
5600.000	1.357	260.549	5598.111	102.312	0.088	102.312	102.312	0.049	0.297
5700.000	1.798	257.715	5698.073	101.784	-2.612	101.784	101.818	358.530	0.448
5800.000	2.628	258.846	5797.997	101.007	-6.394	101.007	101.209	356.378	0.831
5900.000	3.550	260.012	5897.851	100.026	-11.692	100.026	100.707	353.333	0.924

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	4.481	261.473	5997.604	98.910	-18.605	98.910	100.645	349.347	0.937
6100.000	4.125	259.721	6097.322	97.689	-26.007	97.689	101.092	345.092	0.380
6200.000	2.370	261.151	6197.158	96.729	-31.589	96.729	101.757	341.914	1.757
6300.000	1.398	261.802	6297.102	96.237	-34.839	96.237	102.349	340.099	0.972
6400.000	0.586	224.593	6397.087	95.699	-36.406	95.699	102.390	339.172	0.996
6500.000	0.296	181.797	6497.085	95.077	-36.774	95.077	101.941	338.855	0.420
6600.000	0.968	130.029	6597.079	94.276	-36.135	94.276	100.964	339.029	0.819
6700.000	0.898	120.759	6697.065	93.332	-34.815	93.332	99.614	339.543	0.166
6800.000	0.554	47.368	6797.059	93.259	-33.786	93.259	99.190	340.085	0.910
6850.000	0.663	37.114	6847.056	93.654	-33.434	93.654	99.442	340.354	0.307