



Company/Rig: Noble Energy/ CoreTech  
 WELL/API#: Carpio 22-43/05-123-22024  
 DECLINATION: 8.26 Degrees  
 TD AS DRILLED: 7119 Feet  
 COUNTY/STATE: Weld/Colorado  
 VS-Azi: 0.000 Degrees  
 Latitude: 40.46631, Longitude: -104.53393  
 Grid North = True North -0.62 degs (NAD 27)  
 Grid Correction Applied = -0.62 degs



DEPTH REFERENCE : RKB=GL/ ELEVATION= 4733 Feet

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro\_run01-01-de\_01.ut  
 Minimum Curvature Method  
 Report Date/Time: 11/12/2015 / 08:55

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD  
 NORTH REFERENCE: GRID  
 HENDERSON, COLORADO  
 303-853-4976  
 Surveyor: Sean Bratt / Carpio 22-43

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	0.569	198.289	99.998	-0.472	-0.156	-0.472	0.497	198.289	0.569
200.000	0.272	132.153	199.996	-1.103	-0.136	-1.103	1.111	187.025	0.522
300.000	0.118	272.331	299.996	-1.258	-0.063	-1.258	1.260	182.868	0.371
400.000	0.254	240.613	399.995	-1.363	-0.359	-1.363	1.409	194.773	0.166
500.000	0.260	138.636	499.995	-1.642	-0.403	-1.642	1.691	193.778	0.400
600.000	0.272	129.595	599.993	-1.964	-0.070	-1.964	1.965	182.032	0.044
700.000	0.078	60.207	699.993	-2.081	0.172	-2.081	2.088	175.266	0.255
800.000	0.120	339.750	799.993	-1.949	0.195	-1.949	1.959	174.279	0.132
900.000	0.298	119.609	899.993	-1.980	0.386	-1.980	2.017	168.980	0.398
1000.000	0.695	158.279	999.989	-2.672	0.836	-2.672	2.800	162.617	0.498
1100.000	0.681	161.362	1099.982	-3.798	1.251	-3.798	3.999	161.774	0.039
1200.000	0.932	124.664	1199.972	-4.825	2.110	-4.825	5.266	156.378	0.561
1300.000	0.807	150.883	1299.961	-5.902	3.122	-5.902	6.677	152.125	0.413
1400.000	0.652	107.059	1399.954	-6.684	4.008	-6.684	7.794	149.050	0.563
1500.000	0.464	136.678	1499.949	-7.146	4.830	-7.146	8.625	145.943	0.338
1600.000	0.370	140.453	1599.946	-7.690	5.314	-7.690	9.347	145.354	0.098
1700.000	0.276	133.088	1699.945	-8.103	5.695	-8.103	9.904	144.899	0.103
1800.000	0.339	48.352	1799.944	-8.070	6.092	-8.070	10.112	142.952	0.417

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
1900.000	0.701	34.967	1899.940	-7.372	6.664	-7.372	9.938	137.887	0.379
2000.000	0.126	26.890	1999.937	-6.773	7.065	-6.773	9.787	133.791	0.577
2100.000	0.652	4.551	2099.934	-6.108	7.159	-6.108	9.411	130.467	0.537
2200.000	0.491	1.367	2199.929	-5.112	7.215	-5.112	8.842	125.320	0.164
2300.000	0.952	348.111	2299.921	-3.871	7.054	-3.871	8.046	118.756	0.487
2400.000	1.292	0.805	2399.902	-1.930	6.899	-1.930	7.164	105.633	0.420
2500.000	1.273	2.549	2499.877	0.307	6.964	0.307	6.971	87.475	0.043
2600.000	1.400	352.945	2599.850	2.629	6.863	2.629	7.350	69.040	0.257
2700.000	1.505	357.810	2699.817	5.153	6.663	5.153	8.423	52.282	0.162
2800.000	1.292	2.223	2799.788	7.593	6.657	7.593	10.097	41.243	0.238
2900.000	1.442	353.897	2899.759	9.971	6.567	9.971	11.939	33.369	0.248
3000.000	1.244	2.507	2999.732	12.307	6.480	12.307	13.909	27.770	0.282
3100.000	1.309	349.573	3099.707	14.515	6.321	14.515	15.831	23.533	0.295
3200.000	0.806	7.300	3199.690	16.335	6.204	16.335	17.474	20.796	0.595
3300.000	0.687	33.720	3299.682	17.531	6.626	17.531	18.741	20.704	0.360
3400.000	0.467	95.356	3399.678	17.992	7.364	17.992	19.441	22.260	0.621
3500.000	0.622	163.759	3499.674	17.433	7.922	17.433	19.148	24.438	0.625
3600.000	0.433	129.761	3599.670	16.670	8.364	16.670	18.651	26.646	0.357
3700.000	0.289	209.108	3699.668	16.208	8.532	16.208	18.317	27.764	0.474
3800.000	0.371	209.022	3799.667	15.705	8.253	15.705	17.742	27.722	0.082
3900.000	0.481	192.490	3899.664	15.013	8.006	15.013	17.014	28.069	0.164
4000.000	0.956	188.910	3999.656	13.779	7.786	13.779	15.826	29.468	0.477
4100.000	0.640	161.907	4099.646	12.423	7.830	12.423	14.684	32.222	0.483
4200.000	0.619	191.926	4199.641	11.363	7.892	11.363	13.834	34.781	0.327
4300.000	0.732	222.218	4299.634	10.361	7.351	10.361	12.703	35.354	0.370
4400.000	1.248	240.574	4399.619	9.352	5.973	9.352	11.097	32.563	0.599
4500.000	1.874	255.420	4499.582	8.406	3.442	8.406	9.083	22.266	0.740
4600.000	2.296	255.499	4599.515	7.493	-0.080	7.493	7.493	359.387	0.422
4700.000	2.425	248.210	4699.431	6.206	-3.984	6.206	7.374	327.301	0.327
4800.000	1.925	264.950	4799.359	5.272	-7.622	5.272	9.268	304.674	0.803
4900.000	1.666	284.648	4899.311	5.492	-10.702	5.492	12.029	297.168	0.665
5000.000	1.700	302.051	4999.269	6.647	-13.365	6.647	14.927	296.443	0.510
5100.000	1.753	314.207	5099.223	8.501	-15.719	8.501	17.870	298.404	0.369
5200.000	1.302	337.324	5199.189	10.616	-17.254	10.616	20.258	301.603	0.755
5300.000	1.527	356.526	5299.159	12.994	-17.772	12.994	22.016	306.171	0.521
5400.000	1.853	3.975	5399.115	15.936	-17.741	15.936	23.847	311.932	0.392
5500.000	1.960	17.859	5499.060	19.177	-17.104	19.177	25.696	318.270	0.473
5600.000	1.866	19.254	5599.005	22.342	-16.043	22.342	27.505	324.320	0.105
5700.000	1.392	36.787	5698.964	24.853	-14.778	24.853	28.915	329.263	0.683
5800.000	1.290	50.840	5798.937	26.537	-13.178	26.537	29.629	333.592	0.343

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
5900.000	1.242	35.317	5898.913	28.132	-11.678	28.132	30.460	337.455	0.345
6000.000	0.819	38.333	5998.897	29.577	-10.608	29.577	31.422	340.269	0.426
6100.000	0.816	15.916	6098.887	30.823	-9.970	30.823	32.395	342.076	0.318
6200.000	1.026	334.744	6198.875	32.318	-10.156	32.318	33.876	342.554	0.677
6300.000	1.158	322.936	6298.857	33.935	-11.148	33.935	35.719	341.815	0.260
6400.000	1.344	340.393	6398.833	35.846	-12.150	35.846	37.849	341.276	0.422
6500.000	1.072	343.850	6498.811	37.849	-12.804	37.849	39.956	341.310	0.282
6600.000	0.755	1.589	6598.798	39.405	-13.046	39.405	41.509	341.682	0.421
6700.000	0.715	28.970	6698.790	40.609	-12.725	40.609	42.557	342.601	0.350
6800.000	1.187	76.947	6798.778	41.389	-11.414	41.389	42.934	344.582	0.885