



Company/ Rig: Noble Energy/ CoreTech
Well/API#: Monfort E 30-16/05-123-23553
Declination: 8.31 Degrees
TD as Drilled: 7506 Feet
County/State: Weld/Colorado
VS-Azi: 0.000 Degrees
Latitude: 40.45732, Longitude: -104.69933
Grid North = True North -0.52 degs (NAD 27)
Grid Correction Applied = -0.52 degs



Depth Reference : RKB= GL/ Elevation= 4708 Feet

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 4/7/2016 / 08:50

Lat & Long Obtained by Handheld GPS at Wellhead

North Reference: Grid

Henderson, Colorado

303-853-4976

Surveyor: Sean Bratt / Monfort E 30-16

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	0.793	270.529	99.997	0.006	-0.692	0.006	0.692	270.529	0.793
200.000	0.585	307.364	199.990	0.323	-1.790	0.323	1.819	280.220	0.478
300.000	0.227	333.828	299.987	0.811	-2.283	0.811	2.423	289.549	0.395
400.000	0.493	207.401	399.986	0.607	-2.569	0.607	2.640	283.292	0.654
500.000	0.509	204.116	499.982	-0.180	-2.948	-0.180	2.954	266.499	0.033
600.000	0.037	95.090	599.981	-0.589	-3.098	-0.589	3.153	259.243	0.522
700.000	0.017	304.997	699.981	-0.583	-3.078	-0.583	3.133	259.279	0.052
800.000	0.435	277.180	799.980	-0.527	-3.467	-0.527	3.507	261.360	0.420
900.000	0.628	233.420	899.976	-0.806	-4.284	-0.806	4.359	259.342	0.435
1000.000	0.390	180.410	999.973	-1.474	-4.726	-1.474	4.951	252.684	0.502
1100.000	0.671	195.653	1099.968	-2.378	-4.887	-2.378	5.435	244.051	0.312
1200.000	2.411	187.610	1199.928	-5.027	-5.323	-5.027	7.322	226.640	1.749
1300.000	3.484	182.461	1299.795	-10.148	-5.732	-10.148	11.655	209.462	1.104
1400.000	5.535	176.054	1399.480	-17.996	-5.531	-17.996	18.827	197.085	2.109
1500.000	7.230	172.186	1498.857	-29.043	-4.343	-29.043	29.366	188.506	1.748
1600.000	8.824	172.889	1597.874	-42.889	-2.538	-42.889	42.964	183.387	1.597
1700.000	10.982	172.420	1696.379	-59.945	-0.332	-59.945	59.946	180.317	2.159
1800.000	12.955	172.393	1794.200	-80.499	2.409	-80.499	80.535	178.286	1.973

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	15.082	173.775	1891.216	-104.546	5.304	-104.546	104.681	177.096	2.153
2000.000	16.777	172.506	1987.373	-131.791	8.597	-131.791	132.071	176.268	1.731
2100.000	18.716	171.785	2082.610	-161.982	12.772	-161.982	162.485	175.492	1.951
2200.000	19.599	171.217	2177.071	-194.437	17.626	-194.437	195.234	174.820	0.903
2300.000	19.562	172.095	2271.289	-227.594	22.489	-227.594	228.703	174.357	0.297
2400.000	19.943	171.148	2365.405	-261.028	27.416	-261.028	262.463	174.004	0.498
2500.000	20.527	171.008	2459.233	-295.196	32.781	-295.196	297.010	173.663	0.586
2600.000	20.872	171.605	2552.778	-330.136	38.122	-330.136	332.330	173.413	0.404
2700.000	21.496	172.273	2646.020	-365.915	43.186	-365.915	368.455	173.269	0.669
2800.000	22.183	173.409	2738.843	-402.824	47.816	-402.824	405.652	173.231	0.807
2900.000	22.088	173.518	2831.472	-440.259	52.106	-440.259	443.332	173.250	0.104
3000.000	21.603	174.236	2924.291	-477.256	56.077	-477.256	480.540	173.299	0.553
3100.000	21.456	174.522	3017.314	-513.778	59.672	-513.778	517.232	173.375	0.181
3200.000	19.608	174.053	3110.957	-548.676	63.157	-548.676	552.299	173.434	1.856
3300.000	19.398	174.610	3205.220	-581.898	66.455	-581.898	585.681	173.485	0.280
3400.000	19.879	174.988	3299.403	-615.368	69.501	-615.368	619.280	173.556	0.497
3500.000	19.988	174.482	3393.412	-649.316	72.629	-649.316	653.366	173.618	0.204
3600.000	17.579	174.433	3488.079	-681.362	75.738	-681.362	685.559	173.657	2.409
3700.000	18.129	173.381	3583.263	-711.846	78.997	-711.846	716.216	173.668	0.638
3800.000	20.325	171.988	3677.680	-744.503	83.211	-744.503	749.138	173.623	2.244
3900.000	21.317	169.377	3771.150	-779.567	88.982	-779.567	784.629	173.488	1.358
4000.000	22.108	168.272	3864.055	-815.858	96.158	-815.858	821.505	173.278	0.890
4100.000	22.603	166.868	3956.540	-852.998	104.350	-852.998	859.357	173.025	0.728
4200.000	20.583	167.723	4049.517	-888.893	112.455	-888.893	895.978	172.790	2.044
4300.000	20.002	171.687	4143.315	-922.994	118.666	-922.994	930.591	172.674	1.492
4400.000	20.989	172.505	4236.983	-957.675	123.475	-957.675	965.602	172.653	1.028
4500.000	20.787	173.367	4330.411	-993.058	127.861	-993.058	1001.255	172.663	0.368
4600.000	21.398	173.428	4423.711	-1028.81	131.999	-1028.81	1037.240	172.689	0.612
4700.000	21.538	172.406	4516.773	-1065.12	136.512	-1065.12	1073.836	172.696	0.399
4800.000	20.031	171.067	4610.264	-1100.24	141.598	-1100.24	1109.314	172.667	1.580
4900.000	18.250	171.349	4704.732	-1132.64	146.613	-1132.64	1142.090	172.624	1.783
5000.000	15.961	172.321	4800.302	-1161.75	150.806	-1161.75	1171.497	172.604	2.307
5100.000	14.206	171.874	4896.853	-1187.52	154.378	-1187.52	1197.517	172.593	1.759
5200.000	13.085	173.180	4994.029	-1210.91	157.456	-1210.91	1221.107	172.591	1.162
5300.000	10.216	172.232	5091.959	-1230.94	160.000	-1230.94	1241.298	172.594	2.876
5400.000	7.699	171.517	5190.731	-1246.36	162.187	-1246.36	1256.866	172.586	2.519
5500.000	5.598	172.229	5290.053	-1257.82	163.835	-1257.82	1268.442	172.579	2.103
5600.000	3.128	172.969	5389.756	-1265.36	164.828	-1265.36	1276.049	172.578	2.470
5700.000	1.924	173.630	5489.657	-1269.74	165.349	-1269.74	1280.456	172.581	1.205
5800.000	0.804	193.434	5589.627	-1272.09	165.372	-1272.09	1282.791	172.593	1.199

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	0.604	180.295	5689.620	-1273.30	165.206	-1273.30	1283.969	172.607	0.256
6000.000	0.447	169.094	5789.615	-1274.21	165.277	-1274.21	1284.880	172.609	0.187
6100.000	0.519	210.048	5889.612	-1274.98	165.124	-1274.98	1285.628	172.621	0.344
6200.000	0.498	220.736	5989.608	-1275.70	164.614	-1275.70	1286.278	172.647	0.097
6300.000	0.420	234.140	6089.605	-1276.25	164.033	-1276.25	1286.744	172.676	0.132
6400.000	0.435	89.635	6189.604	-1276.46	164.116	-1276.46	1286.965	172.674	0.815
6500.000	0.119	199.478	6289.603	-1276.55	164.461	-1276.55	1287.104	172.659	0.489
6600.000	0.370	29.713	6389.602	-1276.37	164.587	-1276.37	1286.938	172.652	0.488
6700.000	0.188	161.946	6489.602	-1276.25	164.798	-1276.25	1286.841	172.642	0.516
6800.000	0.208	252.532	6589.601	-1276.46	164.676	-1276.46	1287.034	172.649	0.281
6900.000	0.180	196.724	6689.601	-1276.66	164.458	-1276.66	1287.209	172.660	0.183
7000.000	0.359	280.074	6789.600	-1276.76	164.104	-1276.76	1287.259	172.676	0.382
7100.000	0.252	235.158	6889.599	-1276.83	163.615	-1276.83	1287.267	172.698	0.253
7200.000	0.035	192.725	6989.598	-1276.98	163.428	-1276.98	1287.398	172.707	0.227