



Company/Rig: Noble Energy/ CoreTech
WELL/API#: Sitzman C 4-17/05-123-27308
DECLINATION: 8.17 Degrees
TD AS DRILLED: 6995 Feet
COUNTY/STATE: Weld/Colorado
VS-Azi: 0.000 Degrees
Latitude: 40.34491, Longitude: -104.55050
Grid North = True North -0.61 degs (NAD 27)
Grid Correction Applied = -0.61 degs



DEPTH REFERENCE : RKB=GL/ ELEVATION= 4689 Feet

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-02-de_01.ut
Minimum Curvature Method
Report Date/Time: 9/27/2016 / 10:28

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID
HENDERSON, COLORADO
303-853-4976

Surveyor: Sean Bratt / Sitzman C 4-17

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	0.135	120.705	100.000	-0.060	0.102	-0.060	0.118	120.705	0.135
200.000	0.179	109.623	200.000	-0.173	0.350	-0.173	0.391	116.299	0.053
300.000	0.242	64.433	299.999	-0.135	0.688	-0.135	0.701	101.067	0.172
400.000	0.284	49.662	399.998	0.117	1.068	0.117	1.074	83.738	0.080
500.000	0.291	29.228	499.997	0.499	1.381	0.499	1.468	70.120	0.102
600.000	0.290	24.812	599.995	0.951	1.611	0.951	1.871	59.453	0.022
700.000	0.220	289.323	699.995	1.244	1.536	1.244	1.977	50.991	0.381
800.000	0.172	239.690	799.994	1.232	1.225	1.232	1.738	44.840	0.170
900.000	0.237	200.641	899.994	0.963	1.023	0.963	1.405	46.731	0.150
1000.000	0.348	192.641	999.992	0.473	0.884	0.473	1.002	61.844	0.118
1100.000	0.253	176.501	1099.991	-0.044	0.830	-0.044	0.832	93.028	0.127
1200.000	0.366	194.029	1199.989	-0.574	0.767	-0.574	0.958	126.819	0.146
1300.000	0.121	218.924	1299.988	-0.966	0.623	-0.966	1.149	147.175	0.261
1400.000	0.177	261.469	1399.988	-1.071	0.404	-1.071	1.144	159.335	0.120
1500.000	0.399	266.519	1499.987	-1.115	-0.097	-1.115	1.119	184.956	0.223
1600.000	0.677	257.982	1599.982	-1.259	-1.022	-1.259	1.621	219.068	0.288

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
1700.000	0.912	249.206	1699.973	-1.664	-2.343	-1.664	2.874	234.617	0.264
1800.000	1.717	247.883	1799.946	-2.511	-4.476	-2.511	5.132	240.706	0.806
1900.000	2.021	251.266	1899.892	-3.642	-7.534	-3.642	8.368	244.203	0.323
2000.000	2.233	259.926	1999.824	-4.549	-11.122	-4.549	12.016	247.756	0.384
2100.000	2.418	264.887	2099.741	-5.077	-15.140	-5.077	15.969	251.461	0.273
2200.000	2.420	268.087	2199.652	-5.336	-19.351	-5.336	20.073	254.584	0.135
2300.000	2.476	263.066	2299.561	-5.667	-23.605	-5.667	24.275	256.500	0.222
2400.000	2.638	256.358	2399.462	-6.471	-27.985	-6.471	28.724	256.981	0.340
2500.000	2.848	243.993	2499.348	-8.103	-32.455	-8.103	33.451	255.982	0.626
2600.000	2.718	244.850	2599.230	-10.200	-36.835	-10.200	38.221	254.522	0.136
2700.000	2.610	243.946	2699.122	-12.208	-41.027	-12.208	42.804	253.429	0.117
2800.000	2.064	252.231	2799.039	-13.757	-44.787	-13.757	46.852	252.924	0.640
2900.000	1.718	257.781	2898.984	-14.624	-47.966	-14.624	50.146	253.044	0.391
3000.000	1.545	260.260	2998.944	-15.169	-50.760	-15.169	52.978	253.361	0.187
3100.000	1.350	257.938	3098.912	-15.644	-53.241	-15.644	55.491	253.626	0.203
3200.000	1.247	259.692	3198.886	-16.085	-55.464	-16.085	57.749	253.828	0.110
3300.000	0.962	246.489	3298.867	-16.614	-57.304	-16.614	59.664	253.831	0.381
3400.000	1.083	212.783	3398.852	-17.744	-58.586	-17.744	61.214	253.150	0.604
3500.000	1.468	195.602	3498.828	-19.772	-59.442	-19.772	62.644	251.602	0.539
3600.000	1.409	204.937	3598.796	-22.120	-60.305	-22.120	64.234	249.856	0.241
3700.000	1.224	203.418	3698.770	-24.215	-61.248	-24.215	65.861	248.428	0.189
3800.000	1.262	222.279	3798.747	-26.010	-62.413	-26.010	67.616	247.376	0.409
3900.000	1.177	231.883	3898.724	-27.459	-63.962	-27.459	69.607	246.766	0.221
4000.000	1.098	241.148	3998.705	-28.555	-65.609	-28.555	71.554	246.480	0.200
4100.000	0.920	243.831	4098.689	-29.372	-67.169	-29.372	73.310	246.381	0.184
4200.000	0.829	299.086	4198.679	-29.374	-68.521	-29.374	74.552	246.796	0.815
4300.000	1.063	344.204	4298.667	-28.130	-69.406	-28.130	74.890	247.938	0.757
4400.000	1.466	17.781	4398.643	-26.019	-69.268	-26.019	73.993	249.412	0.826
4500.000	1.169	21.905	4498.617	-23.854	-68.497	-23.854	72.531	250.799	0.311
4600.000	0.819	359.164	4598.602	-22.193	-68.126	-22.193	71.650	251.956	0.521
4700.000	0.707	279.926	4698.596	-21.372	-68.745	-21.372	71.990	252.730	0.977
4800.000	1.642	262.500	4798.574	-21.453	-70.773	-21.453	73.953	253.137	0.990
4900.000	1.966	264.387	4898.524	-21.807	-73.900	-21.807	77.051	253.559	0.330
5000.000	1.813	260.950	4998.470	-22.224	-77.169	-22.224	80.306	253.934	0.191
5100.000	1.429	255.242	5098.430	-22.790	-79.937	-22.790	83.122	254.087	0.416
5200.000	1.109	250.188	5198.405	-23.436	-82.053	-23.436	85.334	254.060	0.338
5300.000	1.216	249.583	5298.384	-24.134	-83.957	-24.134	87.357	253.962	0.107
5400.000	1.331	246.373	5398.360	-24.969	-86.015	-24.969	89.566	253.813	0.136
5500.000	0.694	249.608	5498.344	-25.646	-87.647	-25.646	91.322	253.690	0.640

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
5600.000	0.705	296.617	5598.337	-25.581	-88.764	-25.581	92.377	253.923	0.558
5700.000	0.844	293.219	5698.328	-25.015	-89.991	-25.015	93.403	254.465	0.146
5800.000	0.818	283.480	5798.317	-24.559	-91.362	-24.559	94.605	254.954	0.143
5900.000	0.293	311.977	5898.312	-24.221	-92.247	-24.221	95.374	255.288	0.578
6000.000	0.278	293.668	5998.311	-23.953	-92.659	-23.953	95.705	255.506	0.092
6100.000	0.433	242.041	6098.309	-24.033	-93.215	-24.033	96.263	255.543	0.340
6200.000	0.084	305.737	6198.308	-24.167	-93.608	-24.167	96.677	255.524	0.403
6300.000	0.128	284.608	6298.308	-24.096	-93.775	-24.096	96.822	255.589	0.059
6400.000	0.466	235.517	6398.307	-24.298	-94.219	-24.298	97.301	255.539	0.394
6500.000	0.267	261.036	6498.305	-24.565	-94.784	-24.565	97.916	255.471	0.252
6600.000	0.356	237.736	6598.303	-24.767	-95.278	-24.767	98.444	255.429	0.153
6700.000	0.486	316.859	6698.301	-24.623	-95.831	-24.623	98.943	255.590	0.546
6750.000	0.490	335.946	6748.300	-24.273	-96.063	-24.273	99.082	255.819	0.324