



Company/Rig: NOBLE ENERGY / Coretech
WELL/API#: Millage 22-12/05-123-10953
DECLINATION: 8.22 Degrees
TD AS DRILLED: 6812 Feet
COUNTY/STATE: Weld/COLORADO
VS-Azi: 0.000 Degrees
Latitude: 40.32849, Longitude: -104.50122
Grid North = True North -0.65 degs (NAD 27)
Grid Correction Applied = -0.65 degs



DEPTH REFERENCE : RKB=SURFACE ELEVATION=4617

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut
Minimum Curvature Method
Report Date/Time: 12/17/2015 / 15:58

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

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

Surveyor: BRIAN BREWBAKER / Millage 22-12

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	0.160	342.967	100.000	0.133	-0.041	0.133	0.139	342.967	0.160
200.000	0.066	156.177	200.000	0.213	-0.058	0.213	0.221	344.747	0.226
300.000	0.078	344.746	300.000	0.226	-0.053	0.226	0.232	346.886	0.144
400.000	0.066	340.553	400.000	0.345	-0.089	0.345	0.356	345.463	0.013
500.000	0.165	178.935	500.000	0.255	-0.106	0.255	0.276	337.438	0.229
600.000	0.176	150.716	599.999	-0.024	-0.028	-0.024	0.037	229.636	0.084
700.000	0.166	133.945	699.999	-0.258	0.151	-0.258	0.299	149.611	0.051
800.000	0.117	262.043	799.999	-0.373	0.154	-0.373	0.403	157.508	0.255
900.000	0.273	226.551	899.998	-0.551	-0.120	-0.551	0.564	192.293	0.191
1000.000	0.217	247.648	999.997	-0.787	-0.468	-0.787	0.916	210.764	0.105
1100.000	0.177	246.262	1099.996	-0.921	-0.785	-0.921	1.210	220.432	0.041
1200.000	0.175	216.165	1199.996	-1.107	-1.016	-1.107	1.502	222.559	0.091
1300.000	0.146	230.384	1299.996	-1.311	-1.204	-1.311	1.780	222.569	0.049
1400.000	0.090	208.193	1399.995	-1.462	-1.340	-1.462	1.983	222.503	0.071
1500.000	0.055	171.313	1499.995	-1.579	-1.370	-1.579	2.090	220.941	0.057
1600.000	0.135	73.452	1599.995	-1.593	-1.249	-1.593	2.024	218.105	0.153
1700.000	0.204	58.574	1699.995	-1.466	-0.984	-1.466	1.766	213.866	0.081
1800.000	0.362	31.626	1799.994	-1.105	-0.667	-1.105	1.291	211.113	0.202

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	0.545	30.042	1899.990	-0.424	-0.263	-0.424	0.499	211.808	0.183
2000.000	0.660	24.637	1999.985	0.511	0.215	0.511	0.554	22.823	0.128
2100.000	0.700	14.998	2099.978	1.624	0.613	1.624	1.736	20.681	0.121
2200.000	0.723	13.174	2199.970	2.828	0.915	2.828	2.972	17.927	0.032
2300.000	0.718	10.959	2299.962	4.057	1.178	4.057	4.225	16.187	0.028
2400.000	0.699	7.290	2399.955	5.277	1.374	5.277	5.453	14.596	0.049
2500.000	0.441	359.744	2499.950	6.267	1.450	6.267	6.432	13.027	0.268
2600.000	0.569	357.565	2599.946	7.147	1.427	7.147	7.288	11.292	0.129
2700.000	0.515	353.172	2699.941	8.089	1.353	8.089	8.201	9.493	0.068
2800.000	0.347	346.650	2799.938	8.830	1.229	8.830	8.915	7.925	0.174
2900.000	0.500	3.363	2899.936	9.560	1.185	9.560	9.633	7.065	0.195
3000.000	0.478	349.156	2999.932	10.405	1.132	10.405	10.466	6.208	0.123
3100.000	0.381	13.321	3099.929	11.138	1.130	11.138	11.195	5.792	0.204
3200.000	0.370	75.020	3199.928	11.545	1.518	11.545	11.644	7.490	0.385
3300.000	0.594	122.077	3299.924	11.353	2.269	11.353	11.577	11.302	0.437
3400.000	0.797	146.024	3399.917	10.500	3.097	10.500	10.948	16.435	0.350
3500.000	0.938	170.398	3499.906	9.116	3.623	9.116	9.810	21.672	0.391
3600.000	1.018	174.572	3599.891	7.425	3.843	7.425	8.361	27.367	0.108
3700.000	1.001	177.102	3699.876	5.668	3.971	5.668	6.921	35.018	0.048
3800.000	0.780	180.152	3799.864	4.115	4.014	4.115	5.748	44.286	0.225
3900.000	0.547	185.525	3899.857	2.959	3.966	2.959	4.949	53.270	0.241
4000.000	0.528	196.047	3999.853	2.042	3.793	2.042	4.307	61.707	0.100
4100.000	0.538	197.367	4099.848	1.150	3.525	1.150	3.708	71.934	0.016
4200.000	0.603	201.257	4199.843	0.211	3.194	0.211	3.201	86.222	0.075
4300.000	0.452	219.354	4299.839	-0.585	2.753	-0.585	2.814	101.994	0.223
4400.000	0.685	236.707	4399.834	-1.218	2.003	-1.218	2.344	121.311	0.287
4500.000	0.477	240.786	4499.829	-1.749	1.140	-1.749	2.088	146.913	0.212
4600.000	0.666	250.736	4599.824	-2.144	0.228	-2.144	2.156	173.940	0.213
4700.000	0.673	248.554	4699.817	-2.551	-0.868	-2.551	2.695	198.788	0.026
4800.000	0.738	257.374	4799.810	-2.906	-2.043	-2.906	3.553	215.103	0.127
4900.000	0.673	270.491	4899.802	-3.042	-3.259	-3.042	4.458	226.969	0.174
5000.000	0.797	277.632	4999.794	-2.945	-4.535	-2.945	5.408	237.004	0.154
5100.000	0.739	274.551	5099.785	-2.801	-5.867	-2.801	6.502	244.479	0.071
5200.000	1.107	286.254	5199.772	-2.480	-7.438	-2.480	7.840	251.562	0.412
5300.000	1.018	317.109	5299.755	-1.558	-8.970	-1.558	9.105	260.146	0.572
5400.000	1.155	328.013	5399.737	-0.052	-10.109	-0.052	10.109	269.706	0.248
5500.000	0.652	347.586	5499.725	1.359	-10.766	1.359	10.851	277.195	0.583
5600.000	1.083	18.768	5599.714	2.810	-10.584	2.810	10.951	284.867	0.624
5700.000	0.667	28.646	5699.702	4.215	-10.001	4.215	10.853	292.853	0.441
5800.000	0.547	25.065	5799.696	5.158	-9.520	5.158	10.828	298.448	0.125

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	0.488	62.632	5899.693	5.786	-8.940	5.786	10.649	302.910	0.338
6000.000	0.348	45.140	5999.690	6.196	-8.347	6.196	10.395	306.587	0.188
6100.000	1.068	30.922	6099.682	7.210	-7.652	7.210	10.514	313.293	0.735
6200.000	1.058	55.447	6199.665	8.533	-6.413	8.533	10.674	323.071	0.452
6300.000	0.516	43.078	6299.655	9.385	-5.345	9.385	10.800	330.338	0.565
6400.000	0.417	61.768	6399.652	9.886	-4.717	9.886	10.954	334.493	0.181
6500.000	0.577	11.982	6499.649	10.551	-4.292	10.551	11.390	337.863	0.443
6600.000	0.501	62.743	6599.645	11.244	-3.799	11.244	11.868	341.332	0.467