



Company/Rig: NOBLE ENERGY/CORETECH
WELL/API#: EHRLICH O 12-2/05-123-20195
DECLINATION: 8.41 DEGREES
TD AS DRILLED: 7365 FEET
COUNTY/STATE: WELD/COLORADO
Latitude: 40.332, Longitude: -104.837
GRID North is 0.430 Degrees East of True North
VS-Azi: 0.000 Degrees



DEPTH REFERENCE : RKB=SURFACE ELEVATION=4738FEET

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 2/9/2015 / 08:19

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: KEVIN MCDOWELL

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	0.637	284.133	99.998	0.136	-0.539	0.136	0.556	284.133	0.637
200.000	0.562	266.051	199.993	0.238	-1.566	0.238	1.584	278.624	0.202
300.000	0.443	271.900	299.989	0.217	-2.442	0.217	2.451	275.070	0.129
400.000	0.135	223.837	399.987	0.144	-2.909	0.144	2.913	272.839	0.367
500.000	0.123	203.421	499.987	-0.039	-3.034	-0.039	3.034	269.262	0.047
600.000	0.231	173.148	599.987	-0.337	-3.052	-0.337	3.071	263.691	0.140
700.000	0.208	195.142	699.986	-0.713	-3.076	-0.713	3.157	256.949	0.087
800.000	0.147	189.829	799.985	-1.014	-3.145	-1.014	3.305	252.123	0.064
900.000	0.102	141.864	899.985	-1.210	-3.112	-1.210	3.339	248.746	0.109
1000.000	0.181	121.034	999.985	-1.362	-2.921	-1.362	3.223	245.005	0.093
1100.000	0.264	111.890	1099.984	-1.529	-2.572	-1.529	2.992	239.263	0.090
1200.000	0.149	109.459	1199.984	-1.659	-2.236	-1.659	2.784	233.430	0.115
1300.000	0.235	6.410	1299.983	-1.498	-2.090	-1.498	2.572	234.370	0.305
1400.000	0.289	13.438	1399.982	-1.049	-2.009	-1.049	2.266	242.431	0.063
1500.000	0.448	2.058	1499.980	-0.412	-1.936	-0.412	1.979	257.982	0.174
1600.000	0.538	357.794	1599.976	0.448	-1.940	0.448	1.991	283.001	0.097
1700.000	0.707	348.273	1699.970	1.521	-2.084	1.521	2.580	306.134	0.198
1800.000	0.979	12.463	1799.960	2.960	-2.024	2.960	3.586	325.630	0.442
1900.000	0.840	39.705	1899.948	4.359	-1.372	4.359	4.569	342.531	0.449

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	0.840	37.009	1999.937	5.508	-0.462	5.508	5.527	355.202	0.040
2100.000	0.673	50.599	2099.928	6.466	0.433	6.466	6.480	3.830	0.244
2200.000	0.489	23.896	2199.923	7.229	1.060	7.229	7.306	8.340	0.323
2300.000	0.408	304.639	2299.921	7.822	0.939	7.822	7.878	6.849	0.576
2400.000	0.780	270.173	2399.916	8.027	-0.035	8.027	8.027	359.751	0.500
2500.000	1.068	257.790	2499.903	7.831	-1.627	7.831	7.999	348.265	0.348
2600.000	1.026	259.484	2599.886	7.471	-3.418	7.471	8.216	335.416	0.052
2700.000	0.830	250.104	2699.873	7.061	-4.980	7.061	8.640	324.807	0.247
2800.000	0.832	255.091	2799.862	6.628	-6.363	6.628	9.187	316.167	0.072
2900.000	0.856	247.802	2899.852	6.158	-7.756	6.158	9.904	308.449	0.110
3000.000	0.859	253.993	2999.840	5.669	-9.169	5.669	10.780	301.729	0.093
3100.000	0.982	258.739	3099.827	5.295	-10.730	5.295	11.965	296.267	0.144
3200.000	1.014	275.695	3199.813	5.216	-12.450	5.216	13.498	292.731	0.296
3300.000	1.003	275.746	3299.797	5.391	-14.201	5.391	15.190	290.788	0.010
3400.000	1.216	273.363	3399.778	5.541	-16.132	5.541	17.057	288.957	0.217
3500.000	1.190	260.772	3499.756	5.437	-18.215	5.437	19.009	286.619	0.265
3600.000	1.246	272.910	3599.734	5.326	-20.326	5.326	21.012	284.682	0.264
3700.000	1.208	274.850	3699.711	5.470	-22.462	5.470	23.119	283.686	0.056
3800.000	0.885	261.735	3799.694	5.448	-24.277	5.448	24.881	282.648	0.400
3900.000	1.150	268.276	3899.678	5.307	-26.045	5.307	26.580	281.517	0.288
4000.000	1.206	266.646	3999.657	5.215	-28.098	5.215	28.578	280.515	0.066
4100.000	1.296	253.779	4099.634	4.838	-30.235	4.838	30.619	279.090	0.294
4200.000	1.396	236.311	4199.607	3.846	-32.335	3.846	32.562	276.783	0.421
4300.000	1.737	221.514	4299.569	2.035	-34.353	2.035	34.413	273.390	0.526
4400.000	1.581	211.598	4399.528	-0.275	-36.080	-0.275	36.081	269.563	0.326
4500.000	0.928	184.857	4499.504	-2.257	-36.872	-2.257	36.941	266.497	0.860
4600.000	1.028	147.364	4599.490	-3.819	-36.457	-3.819	36.656	264.019	0.636
4700.000	0.704	170.368	4699.479	-5.180	-35.870	-5.180	36.242	261.782	0.469
4800.000	0.509	183.477	4799.473	-6.230	-35.794	-6.230	36.332	260.127	0.238
4900.000	0.192	207.037	4899.472	-6.823	-35.897	-6.823	36.540	259.239	0.342
5000.000	0.071	139.693	4999.471	-7.019	-35.933	-7.019	36.612	258.947	0.177
5100.000	0.070	83.530	5099.471	-7.060	-35.832	-7.060	36.521	258.854	0.067
5200.000	0.346	293.548	5199.471	-6.932	-36.048	-6.932	36.709	259.114	0.408
5300.000	0.258	34.728	5299.470	-6.627	-36.197	-6.627	36.798	259.625	0.470
5400.000	0.682	23.695	5399.466	-5.897	-35.829	-5.897	36.311	260.654	0.432
5500.000	0.983	59.433	5499.456	-4.915	-34.852	-4.915	35.197	261.972	0.585
5600.000	0.718	53.632	5599.445	-4.108	-33.609	-4.108	33.859	263.032	0.278
5700.000	0.455	79.305	5699.440	-3.663	-32.714	-3.663	32.919	263.612	0.366
5800.000	0.099	345.848	5799.439	-3.505	-32.345	-3.505	32.535	263.815	0.471
5900.000	0.242	126.180	5899.439	-3.546	-32.196	-3.546	32.391	263.714	0.324

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	0.231	113.634	5999.438	-3.752	-31.841	-3.752	32.061	263.280	0.053
6100.000	0.219	38.546	6099.437	-3.683	-31.537	-3.683	31.751	263.339	0.275
6200.000	0.271	41.246	6199.436	-3.356	-31.262	-3.356	31.442	263.873	0.053
6300.000	0.061	178.362	6299.436	-3.231	-31.105	-3.231	31.272	264.070	0.318
6400.000	0.501	347.209	6399.435	-2.858	-31.200	-2.858	31.331	264.767	0.560
6500.000	0.547	340.698	6499.431	-1.981	-31.455	-1.981	31.517	266.397	0.076
6600.000	0.500	12.608	6599.427	-1.104	-31.517	-1.104	31.537	267.994	0.291
6700.000	0.477	331.437	6699.423	-0.313	-31.621	-0.313	31.623	269.434	0.344
6800.000	0.071	310.852	6799.422	0.094	-31.867	0.094	31.868	270.168	0.412
6900.000	0.077	261.440	6899.422	0.124	-31.980	0.124	31.981	270.222	0.062
7000.000	0.350	46.817	6999.421	0.323	-31.824	0.323	31.826	270.581	0.415
7100.000	0.460	52.916	7099.419	0.774	-31.282	0.774	31.291	271.417	0.118