



Company/Rig: NOBLE ENERGY/ CORETECH
WELL: CORNELIUS 23-34
DECLINATION: 8.37 DEGREES
TD AS DRILLED: 7790 FEET
COUNTY/STATE: WELD/COLORADO
Latitude: 40.263, Longitude: -104.646
GRID North is 0.550 Degrees East of True North
VS-Azi: 0.000 Degrees



DEPTH REFERENCE : RKB=GL SURFACE ELEVATION=4750

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run02-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 8/20/2014 / 14:34

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	0.181	307.926	100.000	0.097	-0.125	0.097	0.158	307.926	0.181
200.000	0.058	70.094	200.000	0.212	-0.202	0.212	0.293	316.319	0.218
300.000	0.267	339.184	299.999	0.447	-0.238	0.447	0.506	332.003	0.274
400.000	0.848	57.405	399.995	1.064	0.303	1.064	1.106	15.902	0.836
500.000	1.241	31.887	499.979	2.382	1.499	2.382	2.814	32.177	0.600
600.000	1.584	25.150	599.948	4.552	2.658	4.552	5.271	30.280	0.380
700.000	1.775	46.046	699.906	6.878	4.360	6.878	8.144	32.372	0.637
800.000	1.412	41.030	799.867	8.883	6.284	8.883	10.881	35.278	0.389
900.000	1.472	29.529	899.836	10.930	7.726	10.930	13.385	35.256	0.295
1000.000	1.401	40.877	999.805	12.972	9.159	12.972	15.880	35.225	0.293
1100.000	1.338	320.111	1099.784	14.792	9.211	14.792	17.426	31.910	1.775
1200.000	1.532	312.869	1199.753	16.597	7.483	16.597	18.206	24.268	0.265
1300.000	1.502	323.758	1299.718	18.563	5.728	18.563	19.427	17.149	0.289
1400.000	3.455	311.837	1399.620	21.630	2.709	21.630	21.799	7.138	2.009
1500.000	2.961	302.075	1499.464	25.011	-1.724	25.011	25.071	356.056	0.735
1600.000	2.831	303.812	1599.336	27.757	-5.965	27.757	28.391	347.872	0.156
1700.000	2.740	300.027	1699.218	30.328	-10.086	30.328	31.961	341.604	0.205
1800.000	2.400	315.147	1799.119	33.008	-13.633	33.008	35.713	337.559	0.755
1900.000	1.460	320.213	1899.061	35.471	-15.925	35.471	38.882	335.823	0.955

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	2.253	311.974	1999.008	37.764	-18.201	37.764	41.922	334.268	0.835
2100.000	2.153	309.427	2098.934	40.272	-21.112	40.272	45.470	332.334	0.140
2200.000	1.360	318.543	2198.886	42.354	-23.349	42.354	48.363	331.133	0.838
2300.000	1.386	311.214	2298.858	44.040	-25.044	44.040	50.663	330.374	0.177
2400.000	1.439	307.460	2398.827	45.601	-26.951	45.601	52.970	329.416	0.107
2500.000	2.480	282.973	2498.769	46.850	-30.056	46.850	55.663	327.318	1.313
2600.000	2.336	285.975	2598.681	47.897	-34.123	47.897	58.809	324.533	0.191
2700.000	2.388	282.002	2698.596	48.891	-38.120	48.891	61.995	322.057	0.172
2800.000	2.143	283.312	2798.518	49.754	-41.977	49.754	65.097	319.846	0.250
2900.000	1.952	284.412	2898.454	50.609	-45.446	50.609	68.019	318.076	0.195
3000.000	2.217	281.112	2998.388	51.406	-48.994	51.406	71.014	316.376	0.291
3100.000	2.830	284.520	3098.290	52.397	-53.283	52.397	74.730	314.520	0.631
3200.000	5.414	288.818	3198.023	54.539	-60.139	54.539	81.186	312.204	2.600
3300.000	6.767	286.997	3297.457	57.782	-70.239	57.782	90.952	309.443	1.366
3400.000	8.356	287.671	3396.584	61.711	-82.797	61.711	103.264	306.698	1.592
3500.000	8.773	290.822	3495.469	66.627	-96.848	66.627	117.553	304.526	0.628
3600.000	8.629	292.182	3594.318	72.170	-110.923	72.170	132.335	303.049	0.251
3700.000	10.486	300.146	3692.930	79.574	-125.741	79.574	148.805	302.327	2.275
3800.000	13.455	308.044	3790.751	91.317	-142.778	91.317	169.482	302.602	3.384
3900.000	15.039	308.579	3887.673	106.578	-162.083	106.578	193.984	303.327	1.589
4000.000	16.082	309.710	3984.006	123.518	-182.881	123.518	220.685	304.035	1.087
4100.000	15.648	307.888	4080.198	140.649	-204.180	140.649	247.934	304.561	0.661
4200.000	15.848	306.474	4176.444	157.048	-225.803	157.048	275.048	304.819	0.433
4300.000	15.926	302.363	4272.628	172.510	-248.373	172.510	302.405	304.782	1.128
4400.000	16.245	308.145	4368.718	188.494	-270.964	188.494	330.078	304.824	1.633
4500.000	17.552	304.737	4464.401	205.727	-294.357	205.727	359.123	304.950	1.639
4600.000	17.154	309.981	4559.855	223.795	-318.050	223.795	388.896	305.132	1.613
4700.000	14.338	309.063	4656.093	241.077	-338.969	241.077	415.954	305.421	2.827
4800.000	14.493	308.344	4752.945	256.643	-358.397	256.643	440.810	305.606	0.237
4900.000	14.910	305.522	4849.672	271.880	-378.682	271.880	466.174	305.677	0.829
5000.000	15.318	306.386	4946.213	287.191	-399.786	287.191	492.248	305.692	0.466
5100.000	16.590	312.819	5042.367	304.732	-420.894	304.732	519.628	305.905	2.176
5200.000	14.987	313.001	5138.591	323.255	-440.823	323.255	546.643	306.253	1.604
5300.000	14.293	314.721	5235.344	340.759	-459.050	340.759	571.703	306.587	0.819
5400.000	13.422	306.260	5332.443	356.312	-477.182	356.312	595.534	306.749	2.203
5500.000	13.665	322.469	5429.697	372.550	-493.742	372.550	618.526	307.036	3.792
5600.000	13.627	310.042	5526.896	389.499	-509.960	389.499	641.692	307.372	2.927
5700.000	11.832	304.227	5624.438	402.846	-527.456	402.846	663.698	307.371	2.203
5800.000	10.054	306.719	5722.616	413.832	-542.931	413.832	682.664	307.315	1.839
5900.000	9.048	310.695	5821.230	424.178	-555.890	424.178	699.243	307.346	1.202

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6000.000	9.333	316.899	5919.949	435.226	-567.392	435.226	715.091	307.490	1.030
6100.000	9.557	316.960	6018.593	447.213	-578.598	447.213	731.283	307.701	0.224
6200.000	9.543	312.101	6117.209	458.838	-590.414	458.838	747.744	307.852	0.806
6300.000	8.057	304.822	6216.032	468.398	-602.318	468.398	763.009	307.871	1.854
6400.000	6.203	303.318	6315.255	475.367	-612.586	475.367	775.394	307.811	1.863
6500.000	4.473	298.313	6414.818	480.185	-620.535	480.185	784.628	307.734	1.790
6600.000	3.395	303.622	6514.581	483.674	-626.434	483.674	791.429	307.672	1.137
6700.000	0.948	310.677	6614.502	485.853	-629.527	485.853	795.209	307.660	2.457
6800.000	0.128	136.799	6714.498	486.311	-630.078	486.311	795.925	307.662	1.075
6900.000	0.244	146.864	6814.497	486.051	-629.885	486.051	795.614	307.656	0.119
7000.000	0.732	160.893	6914.493	485.270	-629.560	485.270	794.879	307.625	0.499
7100.000	0.686	265.400	7014.489	484.618	-629.947	484.618	794.788	307.571	1.121