



Company/Rig: Noble Energy/ CoreTech
WELL: Wells Ranch USX BB 1-10
DECLINATION: 8.22 Degrees
TD AS DRILLED: 6765 Feet
COUNTY/STATE: Weld/Colorado
Latitude: 40.427, Longitude: -104.383
GRID North is 0.720 Degrees East of True North
VS-Azi: 0.000 Degrees



DEPTH REFERENCE : RKB=GL/ ELEVATION= 4679 Feet

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 10/13/2014 / 14:20

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: Sean Bratt

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	1.387	337.758	99.990	1.120	-0.458	1.120	1.210	337.758	1.387
200.000	1.905	337.514	199.949	3.776	-1.552	3.776	4.082	337.659	0.518
300.000	2.798	339.005	299.863	7.591	-3.062	7.591	8.185	338.031	0.896
400.000	2.544	347.734	399.755	12.039	-4.408	12.039	12.820	339.888	0.479
500.000	2.924	345.493	499.641	16.677	-5.519	16.677	17.566	341.689	0.395
600.000	3.016	350.369	599.507	21.740	-6.598	21.740	22.719	343.117	0.269
700.000	2.814	356.977	699.378	26.784	-7.167	26.784	27.727	345.019	0.392
800.000	2.645	354.788	799.264	31.533	-7.506	31.533	32.414	346.610	0.199
900.000	2.317	348.590	899.171	35.812	-8.116	35.812	36.720	347.231	0.423
1000.000	2.293	333.769	999.091	39.589	-9.400	39.589	40.690	346.643	0.595
1100.000	2.042	330.376	1099.019	42.933	-11.166	42.933	44.361	345.422	0.282
1200.000	2.156	335.016	1198.952	46.187	-12.841	46.187	47.938	344.463	0.204
1300.000	2.083	326.323	1298.884	49.404	-14.643	49.404	51.528	343.490	0.329
1400.000	1.912	334.135	1398.823	52.417	-16.379	52.417	54.916	342.648	0.322
1500.000	1.329	343.881	1498.783	55.032	-17.428	55.032	57.726	342.428	0.642
1600.000	0.801	346.930	1598.765	56.827	-17.908	56.827	59.582	342.509	0.531
1700.000	0.339	23.223	1698.760	57.780	-17.950	57.780	60.504	342.742	0.565
1800.000	0.736	1.353	1798.756	58.694	-17.818	58.694	61.339	343.113	0.440
1900.000	0.975	326.304	1898.745	60.045	-18.275	60.045	62.764	343.072	0.563

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	1.198	295.859	1998.728	61.209	-19.687	61.209	64.297	342.170	0.610
2100.000	0.906	290.055	2098.711	61.936	-21.370	61.936	65.519	340.963	0.310
2200.000	1.169	311.092	2198.695	62.877	-22.882	62.877	66.911	340.003	0.459
2300.000	0.925	292.947	2298.679	63.862	-24.394	63.862	68.363	339.094	0.409
2400.000	1.198	252.243	2398.663	63.858	-26.133	63.858	68.999	337.744	0.782
2500.000	1.100	215.913	2498.644	62.762	-27.692	62.762	68.599	336.192	0.723
2600.000	0.874	193.172	2598.629	61.242	-28.429	61.242	67.519	335.099	0.448
2700.000	0.964	201.101	2698.616	59.714	-28.906	59.714	66.342	334.170	0.156
2800.000	1.424	184.372	2798.595	57.690	-29.304	57.690	64.706	333.072	0.572
2900.000	1.361	165.114	2898.566	55.303	-29.093	55.303	62.489	332.253	0.470
3000.000	0.801	194.488	2998.548	53.479	-28.963	53.479	60.818	331.561	0.771
3100.000	0.682	202.911	3098.540	52.255	-29.369	52.255	59.943	330.662	0.161
3200.000	0.699	182.673	3198.533	51.097	-29.630	51.097	59.066	329.892	0.243
3300.000	0.778	138.938	3298.525	49.975	-29.212	49.975	57.887	329.693	0.555
3400.000	0.543	165.068	3398.519	49.006	-28.644	49.006	56.763	329.694	0.376
3500.000	0.557	99.278	3498.515	48.470	-28.042	48.470	55.997	329.948	0.597
3600.000	1.243	134.278	3598.503	47.634	-26.786	47.634	54.649	330.650	0.849
3700.000	1.537	110.194	3698.474	46.413	-24.750	46.413	52.600	331.931	0.647
3800.000	1.407	124.231	3798.441	45.260	-22.476	45.260	50.534	333.591	0.382
3900.000	1.155	91.777	3898.418	44.538	-20.454	44.538	49.010	335.333	0.756
4000.000	0.743	118.036	3998.404	44.202	-18.874	44.202	48.063	336.878	0.589
4100.000	1.036	86.681	4098.393	43.950	-17.400	43.950	47.269	338.401	0.557
4200.000	0.826	83.364	4198.379	44.086	-15.781	44.086	46.825	340.304	0.216
4300.000	0.926	60.551	4298.368	44.566	-14.361	44.566	46.823	342.139	0.360
4400.000	1.029	118.607	4398.356	44.533	-12.869	44.533	46.356	343.882	0.953
4500.000	1.962	130.364	4498.321	42.995	-10.776	42.995	44.325	345.929	0.978
4600.000	2.281	142.433	4598.252	40.308	-8.258	40.308	41.145	348.421	0.547
4700.000	2.381	139.804	4698.170	37.144	-5.704	37.144	37.580	351.269	0.146
4800.000	2.277	146.158	4798.087	33.908	-3.258	33.908	34.064	354.512	0.278
4900.000	1.666	153.420	4898.028	30.958	-1.501	30.958	30.994	357.224	0.659
5000.000	1.504	156.260	4997.989	28.456	-0.322	28.456	28.458	359.351	0.180
5100.000	1.714	159.170	5097.950	25.857	0.738	25.857	25.868	1.635	0.225
5200.000	1.722	176.382	5197.906	22.959	1.365	22.959	23.000	3.402	0.514
5300.000	1.778	165.122	5297.859	19.960	1.858	19.960	20.046	5.318	0.348
5400.000	1.422	180.757	5397.821	17.220	2.240	17.220	17.365	7.411	0.560
5500.000	1.915	172.907	5497.778	14.321	2.430	14.321	14.525	9.629	0.542
5600.000	1.753	163.491	5597.727	11.196	3.071	11.196	11.609	15.337	0.341
5700.000	1.758	157.092	5697.680	8.317	4.102	8.317	9.274	26.255	0.196
5800.000	2.161	162.273	5797.622	5.109	5.273	5.109	7.342	45.908	0.440
5900.000	2.073	168.995	5897.554	1.538	6.192	1.538	6.381	76.053	0.263

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	1.908	155.701	5997.494	-1.755	7.223	-1.755	7.433	103.655	0.489
6100.000	2.187	161.265	6097.430	-5.079	8.521	-5.079	9.920	120.800	0.343
6200.000	2.237	163.170	6197.355	-8.755	9.699	-8.755	13.065	132.071	0.089
6250.000	2.685	164.698	6247.309	-10.818	10.290	-10.818	14.931	136.432	0.905