



Company/Rig: Noble Energy/ CoreTech  
WELL/API#: Wells Ranch USX BB 11-6/05-123-26758  
DECLINATION: 8.22 Degrees  
TD AS DRILLED: 6747 Feet  
COUNTY/STATE: Weld/Colorado  
VS-Azi: 0.000 Degrees  
Latitude: 40.41605, Longitude: -104.40670  
Grid North = True North -0.71 degs (NAD 27)  
Grid Convergence Applied = -0.71 degs



DEPTH REFERENCE : RKB=GL/ ELEVATION= 4668 Feet

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro\_run01-01-de\_01.ut

Minimum Curvature Method

Report Date/Time: 7/16/2015 / 08:46

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	0.465	286.697	99.999	0.117	-0.389	0.117	0.406	286.697	0.465
200.000	0.402	282.410	199.996	0.309	-1.120	0.309	1.162	285.403	0.071
300.000	0.277	275.257	299.994	0.406	-1.704	0.406	1.752	283.409	0.132
400.000	0.137	327.580	399.994	0.529	-2.009	0.529	2.077	284.756	0.222
500.000	0.057	224.861	499.994	0.595	-2.108	0.595	2.190	285.757	0.159
600.000	0.050	99.893	599.994	0.552	-2.100	0.552	2.171	284.733	0.095
700.000	0.173	238.507	699.993	0.466	-2.185	0.466	2.234	282.038	0.213
800.000	0.102	199.698	799.993	0.304	-2.343	0.304	2.363	277.382	0.113
900.000	0.063	2.056	899.993	0.275	-2.371	0.275	2.387	276.610	0.163
1000.000	0.087	284.761	999.993	0.349	-2.443	0.349	2.468	278.131	0.096
1100.000	0.183	303.237	1099.993	0.456	-2.650	0.456	2.689	279.766	0.104
1200.000	0.245	222.753	1199.992	0.387	-2.930	0.387	2.955	277.520	0.281
1300.000	0.201	180.497	1299.992	0.054	-3.076	0.054	3.077	271.012	0.166
1400.000	0.250	5.640	1399.991	0.096	-3.057	0.096	3.058	271.804	0.450
1500.000	0.201	276.080	1499.991	0.332	-3.210	0.332	3.227	275.905	0.320
1600.000	0.190	178.519	1599.990	0.184	-3.380	0.184	3.385	273.124	0.295
1700.000	0.182	233.667	1699.990	-0.076	-3.504	-0.076	3.505	268.758	0.173
1800.000	0.214	324.339	1799.990	-0.019	-3.741	-0.019	3.741	269.717	0.283

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	0.187	112.998	1899.989	0.069	-3.700	0.069	3.700	271.075	0.387
2000.000	0.232	32.377	1999.989	0.177	-3.441	0.177	3.445	272.941	0.274
2100.000	0.145	109.560	2099.988	0.306	-3.213	0.306	3.227	275.432	0.245
2200.000	0.078	229.961	2199.988	0.219	-3.146	0.219	3.153	273.990	0.196
2300.000	0.110	236.986	2299.988	0.124	-3.278	0.124	3.280	272.159	0.034
2400.000	0.109	216.992	2399.988	-0.004	-3.415	-0.004	3.415	269.925	0.038
2500.000	0.058	123.210	2499.988	-0.108	-3.430	-0.108	3.432	268.193	0.127
2600.000	0.095	25.845	2599.988	-0.062	-3.351	-0.062	3.352	268.947	0.117
2700.000	0.057	340.991	2699.988	0.060	-3.332	0.060	3.332	271.025	0.068
2800.000	0.094	349.523	2799.988	0.187	-3.363	0.187	3.368	273.187	0.039
2900.000	0.054	98.481	2899.988	0.261	-3.331	0.261	3.341	274.481	0.123
3000.000	0.080	127.744	2999.988	0.211	-3.229	0.211	3.236	273.742	0.042
3100.000	0.445	79.977	3099.986	0.236	-2.791	0.236	2.801	274.828	0.395
3200.000	0.824	100.679	3199.980	0.170	-1.702	0.170	1.711	275.704	0.437
3300.000	1.369	121.319	3299.962	-0.584	0.025	-0.584	0.585	177.565	0.665
3400.000	2.017	127.156	3399.918	-2.268	2.448	-2.268	3.337	132.816	0.670
3500.000	1.779	130.492	3499.863	-4.339	5.031	-4.339	6.644	130.776	0.262
3600.000	0.253	96.757	3599.845	-5.373	6.431	-5.373	8.380	129.880	1.576
3700.000	0.227	121.476	3699.844	-5.503	6.819	-5.503	8.762	128.903	0.106
3800.000	0.533	219.378	3799.842	-5.966	6.693	-5.966	8.966	131.715	0.608
3900.000	1.445	223.765	3899.826	-7.236	5.525	-7.236	9.104	142.637	0.914
4000.000	2.193	230.385	3999.775	-9.367	3.179	-9.367	9.892	161.254	0.776
4100.000	2.626	241.468	4099.687	-11.681	-0.308	-11.681	11.686	181.510	0.634
4200.000	2.746	244.305	4199.577	-13.814	-4.479	-13.814	14.522	197.965	0.179
4300.000	1.060	244.431	4299.518	-15.252	-7.473	-15.252	16.985	206.102	1.686
4400.000	0.317	285.815	4399.511	-15.576	-8.574	-15.576	17.780	208.830	0.849
4500.000	0.352	295.243	4499.509	-15.370	-9.118	-15.370	17.871	210.678	0.065
4600.000	0.725	298.225	4599.505	-14.939	-9.954	-14.939	17.952	213.674	0.374
4700.000	1.301	285.420	4699.489	-14.338	-11.606	-14.338	18.447	218.988	0.615
4800.000	1.445	321.465	4799.462	-13.050	-13.486	-13.050	18.766	225.941	0.860
4900.000	1.135	350.363	4899.437	-11.087	-14.437	-11.087	18.203	232.477	0.710
5000.000	1.362	357.158	4999.414	-8.923	-14.662	-8.923	17.164	238.676	0.270
5100.000	1.490	344.612	5099.383	-6.482	-15.066	-6.482	16.401	246.720	0.337
5200.000	1.770	338.128	5199.342	-3.795	-15.986	-3.795	16.431	256.645	0.335
5300.000	1.784	329.888	5299.294	-1.016	-17.343	-1.016	17.372	266.649	0.256
5400.000	1.762	323.671	5399.247	1.569	-19.034	1.569	19.099	274.713	0.193
5500.000	1.666	305.195	5499.203	3.646	-21.133	3.646	21.445	279.788	0.558
5600.000	1.733	312.832	5599.159	5.512	-23.430	5.512	24.070	283.238	0.236
5700.000	1.557	324.818	5699.118	7.651	-25.322	7.651	26.453	286.811	0.386
5800.000	1.983	312.394	5799.070	9.928	-27.383	9.928	29.127	289.929	0.571

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	2.009	321.359	5899.010	12.464	-29.756	12.464	32.260	292.727	0.313
6000.000	1.890	347.279	5998.954	15.441	-31.213	15.441	34.824	296.322	0.882
6100.000	1.369	8.394	6098.914	18.231	-31.402	18.231	36.310	300.138	0.787
6200.000	1.408	42.400	6198.886	20.320	-30.399	20.320	36.565	303.761	0.813
6300.000	1.560	66.497	6298.854	21.770	-28.322	21.770	35.722	307.549	0.637
6400.000	1.438	76.029	6398.820	22.616	-25.856	22.616	34.352	311.176	0.277
6500.000	1.351	78.087	6498.790	23.162	-23.485	23.162	32.986	314.603	0.100