



Company/Rig: Noble Energy/ CoreTech
WELL/API#: Wells Ranch USX AA 33-17/05-123-25050
DECLINATION: 8.17 Degrees
TD AS DRILLED: 6985 Feet
COUNTY/STATE: Weld/Colorado
VS-Azi: 0.000 Degrees
Latitude: 40.44671, Longitude: -104.43686
Grid Convergence Applied = -0.69 degs (NAD 27)
Grid North = True North -0.69 degs



DEPTH REFERENCE : RKB=GL/ ELEVATION= 4787 Feet

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 5/12/2015 / 12:35

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	0.234	108.177	100.000	-0.064	0.194	-0.064	0.204	108.177	0.234
200.000	0.538	100.705	199.997	-0.215	0.850	-0.215	0.876	104.183	0.307
300.000	0.061	295.343	299.996	-0.279	1.263	-0.279	1.294	102.468	0.597
400.000	0.371	220.815	399.995	-0.502	1.004	-0.502	1.122	116.552	0.360
500.000	0.507	261.108	499.993	-0.815	0.355	-0.815	0.889	156.473	0.329
600.000	0.560	251.200	599.988	-1.041	-0.545	-1.041	1.175	207.637	0.106
700.000	0.628	242.813	699.983	-1.449	-1.495	-1.449	2.082	225.899	0.110
800.000	0.955	246.907	799.973	-2.026	-2.749	-2.026	3.415	233.609	0.331
900.000	0.617	250.798	899.964	-2.530	-4.024	-2.530	4.754	237.842	0.342
1000.000	0.645	241.082	999.958	-2.979	-5.025	-2.979	5.842	239.338	0.110
1100.000	0.728	247.490	1099.950	-3.495	-6.105	-3.495	7.034	240.212	0.113
1200.000	0.762	238.725	1199.942	-4.083	-7.261	-4.083	8.330	240.647	0.119
1300.000	0.801	232.158	1299.933	-4.857	-8.381	-4.857	9.687	239.905	0.098
1400.000	1.005	240.188	1399.920	-5.722	-9.694	-5.722	11.256	239.447	0.240
1500.000	1.005	254.268	1499.905	-6.396	-11.299	-6.396	12.984	240.488	0.246
1600.000	0.995	241.786	1599.890	-7.044	-12.909	-7.044	14.706	241.379	0.218
1700.000	0.883	257.558	1699.877	-7.621	-14.426	-7.621	16.316	242.154	0.281
1800.000	0.572	264.085	1799.868	-7.838	-15.675	-7.838	17.525	243.432	0.321
1900.000	0.522	216.471	1899.864	-8.256	-16.442	-8.256	18.399	243.337	0.444

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	0.354	89.402	1999.863	-8.620	-16.404	-8.620	18.531	242.280	0.788
2100.000	0.444	112.884	2099.861	-8.767	-15.739	-8.767	18.016	240.880	0.185
2200.000	0.149	115.160	2199.859	-8.973	-15.264	-8.973	17.706	239.551	0.295
2300.000	0.849	77.940	2299.855	-8.873	-14.423	-8.873	16.934	238.399	0.736
2400.000	0.982	79.481	2399.842	-8.562	-12.856	-8.562	15.446	236.336	0.136
2500.000	1.660	76.835	2499.815	-8.076	-10.603	-8.076	13.328	232.705	0.680
2600.000	1.344	79.314	2599.780	-7.528	-8.040	-7.528	11.015	226.882	0.323
2700.000	1.747	79.603	2699.744	-7.036	-5.388	-7.036	8.862	217.447	0.403
2800.000	1.800	76.911	2799.696	-6.405	-2.360	-6.405	6.826	200.223	0.099
2900.000	2.000	70.561	2899.641	-5.469	0.815	-5.469	5.529	171.520	0.290
3000.000	1.996	74.760	2999.580	-4.430	4.141	-4.430	6.064	136.931	0.146
3100.000	1.971	66.013	3099.521	-3.273	7.393	-3.273	8.085	113.883	0.304
3200.000	1.637	70.374	3199.471	-2.095	10.309	-2.095	10.520	101.485	0.361
3300.000	1.240	64.352	3299.439	-1.146	12.630	-1.146	12.682	95.186	0.424
3400.000	0.973	59.157	3399.421	-0.243	14.335	-0.243	14.337	90.970	0.285
3500.000	0.354	94.802	3499.414	0.167	15.372	0.167	15.373	89.378	0.715
3600.000	0.233	270.864	3599.413	0.144	15.477	0.144	15.477	89.467	0.587
3700.000	0.339	244.613	3699.412	0.020	15.006	0.020	15.006	89.923	0.166
3800.000	0.538	220.477	3799.409	-0.464	14.434	-0.464	14.441	91.841	0.268
3900.000	0.425	205.053	3899.406	-1.158	13.971	-1.158	14.019	94.737	0.171
4000.000	0.328	254.932	3999.404	-1.568	13.538	-1.568	13.628	96.609	0.330
4100.000	0.554	259.172	4099.401	-1.734	12.786	-1.734	12.903	97.722	0.229
4200.000	0.460	218.516	4199.397	-2.139	12.061	-2.139	12.249	100.055	0.363
4300.000	0.670	269.307	4299.393	-2.460	11.227	-2.460	11.493	102.358	0.520
4400.000	0.383	273.792	4399.388	-2.445	10.309	-2.445	10.595	103.341	0.289
4500.000	0.463	308.975	4499.386	-2.169	9.661	-2.169	9.902	102.651	0.267
4600.000	0.314	352.837	4599.384	-1.643	9.313	-1.643	9.457	100.006	0.321
4700.000	0.449	324.413	4699.382	-1.054	9.051	-1.054	9.112	96.639	0.228
4800.000	0.722	329.295	4799.376	-0.193	8.502	-0.193	8.504	91.302	0.278
4900.000	0.409	334.124	4899.371	0.670	8.024	0.670	8.052	85.228	0.317
5000.000	0.782	304.313	4999.366	1.376	7.305	1.376	7.433	79.335	0.473
5100.000	1.018	321.182	5099.354	2.453	6.184	2.453	6.653	68.368	0.353
5200.000	0.878	321.628	5199.340	3.745	5.152	3.745	6.369	53.982	0.141
5300.000	0.810	319.088	5299.329	4.880	4.213	4.880	6.447	40.806	0.077
5400.000	0.498	316.522	5399.322	5.730	3.451	5.730	6.689	31.062	0.313
5500.000	0.585	350.609	5499.318	6.549	3.069	6.549	7.232	25.108	0.328
5600.000	0.290	342.711	5599.315	7.294	2.910	7.294	7.853	21.752	0.300
5700.000	0.579	346.988	5699.312	8.028	2.721	8.028	8.477	18.725	0.291
5800.000	0.666	357.077	5799.306	9.102	2.578	9.102	9.460	15.814	0.140
5900.000	0.529	356.495	5899.301	10.143	2.520	10.143	10.451	13.953	0.138

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	0.420	54.469	5999.298	10.816	2.790	10.816	11.170	14.463	0.469
6100.000	0.972	359.586	6099.291	11.877	3.082	11.877	12.270	14.545	0.807
6200.000	1.679	335.574	6199.264	14.059	2.470	14.059	14.274	9.963	0.885
6300.000	1.724	325.587	6299.221	16.634	1.014	16.634	16.664	3.488	0.300
6400.000	1.881	319.314	6399.171	19.119	-0.906	19.119	19.141	357.286	0.252
6500.000	2.304	315.482	6499.104	21.797	-3.386	21.797	22.058	351.171	0.445
6600.000	2.403	307.635	6599.020	24.510	-6.455	24.510	25.346	345.245	0.337
6700.000	2.555	307.599	6698.927	27.151	-9.882	27.151	28.893	340.001	0.152