



Company/Rig: NOBLE ENERGY/ CORETECH
WELL/API#: WELLS RANCH USX BB 11-16 / 05-123-26566
DECLINATION: 8.21 DEGREES
TD AS DRILLED: 6762 FEET
COUNTY/STATE: WELD / COLORADO
VS-Azi: 0.000 Degrees
Latitude: 40.40847, Longitude: -104.39672
Grid North = True North -0.71 degs (NAD 27)
Grid Convergence Applied = -0.71 degs



DEPTH REFERENCE : RKB=SURFACE ELEVATION= 4657 FEET

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 7/21/2015 / 10:43

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	0.343	347.826	99.999	0.293	-0.063	0.293	0.299	347.826	0.343
200.000	0.108	264.211	199.999	0.576	-0.220	0.576	0.616	339.065	0.348
300.000	0.031	337.199	299.999	0.591	-0.325	0.591	0.675	331.221	0.104
400.000	0.221	144.432	399.998	0.459	-0.223	0.459	0.511	334.101	0.252
500.000	0.505	108.899	499.996	0.160	0.307	0.160	0.346	62.503	0.350
600.000	0.675	129.204	599.991	-0.355	1.180	-0.355	1.232	106.765	0.267
700.000	0.402	157.530	699.987	-1.052	1.770	-1.052	2.059	120.715	0.373
800.000	0.570	114.180	799.984	-1.580	2.358	-1.580	2.839	123.816	0.392
900.000	0.288	127.971	899.981	-1.938	3.011	-1.938	3.581	122.775	0.298
1000.000	0.481	174.727	999.979	-2.511	3.248	-2.511	4.105	127.713	0.353
1100.000	0.299	135.385	1099.976	-3.115	3.469	-3.115	4.662	131.919	0.314
1200.000	0.383	184.162	1199.975	-3.633	3.628	-3.633	5.135	135.042	0.292
1300.000	0.453	215.664	1299.972	-4.288	3.373	-4.288	5.456	141.807	0.237
1400.000	0.439	230.085	1399.969	-4.855	2.849	-4.855	5.629	149.595	0.113
1500.000	0.574	218.563	1499.965	-5.492	2.243	-5.492	5.933	157.786	0.168
1600.000	0.582	221.150	1599.960	-6.266	1.596	-6.266	6.466	165.707	0.027
1700.000	0.600	232.948	1699.955	-6.964	0.844	-6.964	7.015	173.087	0.123
1800.000	0.088	352.769	1799.953	-7.203	0.417	-7.203	7.215	176.689	0.648

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	0.350	44.928	1899.953	-6.911	0.623	-6.911	6.939	174.851	0.304
2000.000	0.509	49.038	1999.950	-6.403	1.174	-6.403	6.510	169.610	0.162
2100.000	0.824	26.419	2099.943	-5.467	1.830	-5.467	5.765	161.495	0.405
2200.000	1.114	6.477	2199.929	-3.857	2.260	-3.857	4.470	149.636	0.441
2300.000	1.357	23.972	2299.906	-1.809	2.850	-1.809	3.376	122.397	0.446
2400.000	1.228	357.894	2399.881	0.344	3.292	0.344	3.310	84.038	0.597
2500.000	1.340	351.828	2499.856	2.572	3.087	2.572	4.018	50.202	0.176
2600.000	1.135	328.905	2599.833	4.577	2.409	4.577	5.172	27.762	0.531
2700.000	1.231	319.343	2699.812	6.240	1.198	6.240	6.354	10.866	0.219
2800.000	0.935	331.526	2799.794	7.773	0.109	7.773	7.773	0.800	0.373
2900.000	0.762	23.716	2899.785	9.099	-0.013	9.099	9.099	359.918	0.763
3000.000	0.667	56.794	2999.777	10.027	0.742	10.027	10.054	4.230	0.417
3100.000	1.375	84.941	3099.761	10.452	2.424	10.452	10.729	13.059	0.848
3200.000	2.240	99.620	3199.711	10.231	5.546	10.231	11.637	28.463	0.974
3300.000	2.083	117.674	3299.641	9.060	9.082	9.060	12.829	45.070	0.696
3400.000	1.246	116.660	3399.598	7.728	11.664	7.728	13.992	56.473	0.837
3500.000	1.334	149.436	3499.574	6.238	13.228	6.238	14.625	64.753	0.733
3600.000	1.809	132.803	3599.537	4.163	14.978	4.163	15.546	74.468	0.654
3700.000	2.096	105.059	3699.481	2.615	17.902	2.615	18.092	81.689	0.977
3800.000	2.142	102.235	3799.412	1.744	21.494	1.744	21.564	85.361	0.114
3900.000	1.647	115.446	3899.358	0.731	24.617	0.731	24.628	88.300	0.657
4000.000	1.217	109.080	3999.326	-0.234	26.919	-0.234	26.920	90.498	0.457
4100.000	0.670	66.388	4099.314	-0.347	28.458	-0.347	28.460	90.699	0.856
4200.000	0.568	354.929	4199.309	0.380	28.950	0.380	28.952	89.247	0.727
4300.000	1.217	327.212	4299.297	1.766	28.331	1.766	28.386	86.433	0.761
4400.000	1.727	323.862	4399.264	3.876	26.867	3.876	27.145	81.791	0.518
4500.000	2.062	316.248	4499.209	6.392	24.734	6.392	25.547	75.510	0.418
4600.000	2.040	307.815	4599.145	8.783	22.084	8.783	23.767	68.312	0.302
4700.000	2.798	311.971	4699.055	11.507	18.863	11.507	22.096	58.616	0.777
4800.000	3.272	300.604	4798.916	14.592	14.592	14.592	20.636	44.999	0.764
4900.000	2.485	305.600	4898.789	17.308	10.372	17.308	20.178	30.933	0.825
5000.000	1.874	317.022	4998.716	19.766	7.495	19.766	21.139	20.765	0.748
5100.000	1.448	330.502	5098.675	22.062	5.758	22.062	22.801	14.627	0.575
5200.000	1.268	303.423	5198.647	23.771	4.212	23.771	24.141	10.049	0.660
5300.000	0.937	313.660	5298.629	24.945	2.698	24.945	25.090	6.172	0.384
5400.000	1.238	350.493	5398.612	26.574	1.928	26.574	26.644	4.149	0.744
5500.000	1.535	19.182	5498.584	28.905	2.190	28.905	28.988	4.332	0.745
5600.000	1.120	350.394	5598.558	31.133	2.467	31.133	31.231	4.530	0.773
5700.000	0.718	18.233	5698.545	32.692	2.500	32.692	32.787	4.373	0.589
5800.000	0.462	11.651	5798.540	33.682	2.777	33.682	33.797	4.714	0.265

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	0.226	91.666	5898.538	34.071	3.056	34.071	34.208	5.125	0.478
6000.000	0.946	147.979	5998.533	33.366	3.690	33.366	33.569	6.311	0.842
6100.000	1.301	271.046	6098.523	32.687	2.992	32.687	32.823	5.230	1.983
6200.000	2.657	294.846	6198.463	33.682	-0.247	33.682	33.682	359.580	1.558
6300.000	3.266	298.811	6298.329	36.028	-4.847	36.028	36.353	352.338	0.642
6400.000	3.252	304.668	6398.167	39.015	-9.676	39.015	40.197	346.072	0.333
6500.000	2.769	294.237	6498.030	41.620	-14.211	41.620	43.979	341.147	0.729