



Company/Rig: Noble Energy/Coretech
 WELL/API#: Burbach 15-22/05-123-24936
 DECLINATION: 8.13 Degrees
 TD AS DRILLED: 7,400 Feet
 COUNTY/STATE: Weld/Colorado
 VS-Azi: 0.000 Degrees
 Latitude: 40.49333, Longitude: -104.77030
 Grid North = True North -0.47 degs (NAD 27)
 Grid Correction Applied = -0.47 degs



DEPTH REFERENCE : RKB=GL Elevation=4,800 Feet

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-02-de_01.ut
 Minimum Curvature Method
 Report Date/Time: 3/15/2018 / 13:39

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD
 NORTH REFERENCE: GRID
 HENDERSON, COLORADO
 303-853-4976

Surveyor: Levi Sheldon / Burbach 15-22 / API 05-123-24936

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	0.351	107.080	99.999	-0.090	0.293	-0.090	0.306	107.080	0.351
200.000	0.164	183.336	199.999	-0.323	0.577	-0.323	0.662	119.242	0.351
300.000	0.357	137.307	299.998	-0.695	0.780	-0.695	1.045	131.709	0.270
400.000	0.855	41.245	399.993	-0.363	1.483	-0.363	1.527	103.759	0.960
500.000	1.155	345.814	499.980	1.175	1.728	1.175	2.089	55.785	0.972
600.000	1.226	330.305	599.959	3.081	0.951	3.081	3.225	17.150	0.329
700.000	1.763	322.372	699.924	5.229	-0.518	5.229	5.254	354.341	0.574
800.000	1.158	313.853	799.892	7.146	-2.185	7.146	7.473	342.996	0.641
900.000	1.039	328.610	899.873	8.621	-3.386	8.621	9.262	338.554	0.306
1000.000	0.908	328.543	999.859	10.071	-4.272	10.071	10.940	337.012	0.131
1100.000	1.089	318.704	1099.844	11.461	-5.313	11.461	12.633	335.128	0.248
1200.000	0.966	293.801	1199.828	12.515	-6.711	12.515	14.201	331.798	0.459
1300.000	1.094	317.207	1299.812	13.556	-8.131	13.556	15.807	329.044	0.436
1400.000	0.847	289.515	1399.799	14.503	-9.476	14.503	17.325	326.840	0.523
1500.000	0.921	319.017	1499.787	15.357	-10.700	15.357	18.717	325.133	0.456
1600.000	1.028	309.719	1599.773	16.536	-11.917	16.536	20.383	324.222	0.191
1700.000	1.025	292.146	1699.757	17.447	-13.435	17.447	22.021	322.401	0.314
1800.000	1.004	309.663	1799.742	18.343	-14.939	18.343	23.657	320.841	0.310

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	0.640	284.469	1899.731	19.042	-16.154	19.042	24.971	319.691	0.504
2000.000	1.130	273.613	1999.719	19.244	-17.679	19.244	26.132	317.426	0.516
2100.000	0.885	266.565	2099.704	19.260	-19.435	19.260	27.361	314.741	0.274
2200.000	1.289	257.214	2199.686	18.964	-21.303	18.964	28.521	311.676	0.440
2300.000	1.069	287.411	2299.665	18.994	-23.291	18.994	30.054	309.199	0.650
2400.000	1.069	301.620	2399.648	19.762	-24.975	19.762	31.848	308.354	0.264
2500.000	0.302	274.767	2499.640	20.273	-26.031	20.273	32.994	307.911	0.811
2600.000	0.046	136.073	2599.640	20.266	-26.266	20.266	33.176	307.652	0.338
2700.000	0.558	180.216	2699.638	19.750	-26.240	19.750	32.842	306.968	0.526
2800.000	0.823	203.082	2799.631	18.602	-26.524	18.602	32.397	305.044	0.378
2900.000	0.618	282.205	2899.625	18.056	-27.333	18.056	32.758	303.448	0.932
3000.000	0.406	260.222	2999.621	18.109	-28.210	18.109	33.522	302.699	0.286
3100.000	1.070	270.992	3099.612	18.065	-29.493	18.065	34.586	301.489	0.675
3200.000	1.461	279.124	3199.588	18.284	-31.686	18.284	36.583	299.986	0.429
3300.000	1.499	290.820	3299.555	18.951	-34.167	18.951	39.071	299.015	0.304
3400.000	1.317	317.050	3399.526	20.257	-36.173	20.257	41.458	299.249	0.663
3500.000	1.262	291.135	3499.501	21.495	-37.982	21.495	43.643	299.506	0.581
3600.000	1.041	277.401	3599.481	22.008	-39.910	22.008	45.576	298.875	0.352
3700.000	1.743	302.176	3699.452	22.935	-42.098	22.935	47.940	298.582	0.909
3800.000	1.769	288.663	3799.405	24.239	-44.847	24.239	50.978	298.390	0.414
3900.000	1.303	297.031	3899.369	25.249	-47.322	25.249	53.636	298.083	0.516
4000.000	1.238	275.337	3999.345	25.866	-49.410	25.866	55.771	297.632	0.482
4100.000	1.166	293.784	4099.324	26.377	-51.417	26.377	57.788	297.158	0.392
4200.000	0.822	277.468	4199.309	26.881	-53.060	26.881	59.480	296.868	0.442