



Company/Rig: Noble Energy/ CoreTech
WELL/API#: Foss 42-23/05-123-23549
DECLINATION: 8.26 Degrees
TD AS DRILLED: 6945 Feet
COUNTY/STATE: Weld/Colorado
VS-Azi: 0.000 Degrees
Latitude: 40.47302, Longitude: -104.51074
Grid North = True North -0.64 degs (NAD 27)
Grid Convergence Applied = -0.64 degs



DEPTH REFERENCE : RKB=GL/ ELEVATION= 4657 Feet

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run02-01-de_01_mrg.ut

Minimum Curvature Method

Report Date/Time: 10/12/2015 / 13:13

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: Sean Bratt / Foss 42-23

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	0.936	255.204	99.996	-0.209	-0.790	-0.209	0.817	255.204	0.936
200.000	0.596	265.195	199.987	-0.461	-2.098	-0.461	2.148	257.611	0.365
300.000	0.375	249.224	299.983	-0.620	-2.922	-0.620	2.987	258.013	0.257
400.000	0.386	231.004	399.981	-0.948	-3.489	-0.948	3.616	254.798	0.121
500.000	0.396	216.374	499.978	-1.438	-3.955	-1.438	4.209	250.023	0.100
600.000	0.466	225.277	599.976	-2.002	-4.449	-2.002	4.879	245.773	0.097
700.000	0.402	196.173	699.973	-2.625	-4.836	-2.625	5.503	241.503	0.227
800.000	0.188	230.730	799.972	-3.067	-5.061	-3.067	5.918	238.788	0.269
900.000	0.438	240.539	899.970	-3.359	-5.521	-3.359	6.462	238.687	0.254
1000.000	0.535	234.324	999.966	-3.819	-6.233	-3.819	7.310	238.506	0.110
1100.000	0.609	236.724	1099.961	-4.382	-7.056	-4.382	8.306	238.157	0.078
1200.000	0.279	243.216	1199.958	-4.783	-7.717	-4.783	9.079	238.209	0.333
1300.000	0.733	214.438	1299.954	-5.420	-8.296	-5.420	9.910	236.841	0.507
1400.000	0.288	249.146	1399.950	-6.038	-8.893	-6.038	10.749	235.828	0.522
1500.000	0.670	252.484	1499.947	-6.303	-9.686	-6.303	11.557	236.947	0.383
1600.000	0.380	257.833	1599.942	-6.549	-10.569	-6.549	12.433	238.214	0.294
1700.000	0.452	265.223	1699.940	-6.652	-11.286	-6.652	13.100	239.485	0.090
1800.000	0.257	273.138	1799.938	-6.673	-11.903	-6.673	13.646	240.727	0.200

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	1.119	321.314	1899.930	-5.898	-12.738	-5.898	14.037	245.153	0.966
2000.000	1.129	345.807	1999.911	-4.181	-13.590	-4.181	14.218	252.899	0.477
2100.000	1.433	342.338	2099.886	-2.034	-14.211	-2.034	14.355	261.855	0.313
2200.000	1.190	349.699	2199.860	0.179	-14.776	0.179	14.777	270.695	0.296
2300.000	0.984	351.221	2299.842	2.050	-15.092	2.050	15.231	277.734	0.208
2400.000	0.913	357.817	2399.828	3.695	-15.254	3.695	15.695	283.615	0.130
2500.000	0.789	10.866	2499.817	5.167	-15.154	5.167	16.011	288.827	0.229
2600.000	0.583	22.599	2599.810	6.313	-14.829	6.313	16.117	293.060	0.248
2700.000	0.759	14.867	2699.803	7.423	-14.463	7.423	16.257	297.169	0.197
2800.000	0.810	37.553	2799.794	8.624	-13.863	8.624	16.326	301.885	0.312
2900.000	0.679	48.004	2899.786	9.580	-12.992	9.580	16.142	306.406	0.188
3000.000	0.692	43.128	2999.779	10.417	-12.139	10.417	15.996	310.636	0.060
3100.000	0.564	30.179	3099.773	11.283	-11.479	11.283	16.096	314.508	0.190
3200.000	0.868	314.483	3199.767	12.239	-11.772	12.239	16.982	316.116	0.911
3300.000	1.283	264.168	3299.751	12.656	-13.426	12.656	18.451	313.311	0.988
3400.000	0.953	270.041	3399.732	12.543	-15.371	12.543	19.839	309.216	0.348
3500.000	1.607	276.439	3499.706	12.701	-17.596	12.701	21.701	305.823	0.668
3600.000	1.722	283.448	3599.664	13.208	-20.450	13.208	24.344	302.857	0.234
3700.000	1.595	285.307	3699.622	13.925	-23.254	13.925	27.104	300.914	0.138
3800.000	1.455	265.877	3799.587	14.201	-25.863	14.201	29.505	298.770	0.533
3900.000	0.814	252.237	3899.567	13.893	-27.806	13.893	31.083	296.548	0.691
4000.000	0.407	173.055	3999.563	13.324	-28.440	13.324	31.406	295.102	0.839
4100.000	0.818	72.481	4099.559	13.186	-27.716	13.186	30.693	295.444	0.978
4200.000	1.020	41.801	4199.547	14.065	-26.441	14.065	29.949	298.010	0.524
4300.000	1.592	22.966	4299.521	16.008	-25.306	16.008	29.944	302.317	0.708
4400.000	1.572	31.896	4399.483	18.452	-24.039	18.452	30.304	307.509	0.247
4500.000	1.845	19.018	4499.438	21.139	-22.789	21.139	31.084	312.848	0.469
4600.000	1.692	9.077	4599.391	24.118	-22.032	24.118	32.666	317.589	0.342
4700.000	1.627	9.092	4699.349	26.978	-21.574	26.978	34.544	321.351	0.065
4800.000	1.636	7.946	4799.309	29.794	-21.153	29.794	36.539	324.627	0.034
4900.000	1.637	15.430	4899.268	32.585	-20.575	32.585	38.537	327.730	0.214
5000.000	1.437	25.696	4999.232	35.091	-19.652	35.091	40.219	330.750	0.339
5100.000	1.650	62.152	5099.198	36.894	-17.835	36.894	40.979	334.201	0.987
5200.000	1.877	90.127	5199.152	37.563	-14.924	37.563	40.419	338.332	0.880
5300.000	1.895	98.046	5299.098	37.328	-11.649	37.328	39.103	342.669	0.261
5400.000	2.146	88.998	5399.036	37.129	-8.140	37.129	38.011	347.635	0.405
5500.000	1.441	89.510	5498.987	37.173	-5.010	37.173	37.509	352.324	0.704
5600.000	0.743	97.786	5598.968	37.096	-3.110	37.096	37.226	355.208	0.714
5700.000	0.456	122.125	5698.963	36.796	-2.131	36.796	36.858	356.686	0.378
5800.000	0.388	142.553	5798.960	36.316	-1.588	36.316	36.350	357.497	0.164

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	0.481	213.190	5898.958	35.695	-1.611	35.695	35.732	357.416	0.508
6000.000	0.612	226.105	5998.953	34.974	-2.225	34.974	35.045	356.359	0.179
6100.000	0.747	219.137	6098.946	34.099	-3.021	34.099	34.232	354.936	0.158
6200.000	0.681	200.506	6198.939	33.037	-3.641	33.037	33.237	353.711	0.240
6300.000	0.719	235.368	6298.932	32.124	-4.365	32.124	32.419	352.262	0.421
6400.000	0.533	254.565	6398.926	31.644	-5.329	31.644	32.089	350.440	0.278
6500.000	0.453	253.300	6498.922	31.406	-6.156	31.406	32.004	348.909	0.080
6600.000	0.200	328.733	6598.921	31.442	-6.626	31.442	32.132	348.100	0.447
6700.000	0.197	86.527	6698.920	31.601	-6.545	31.601	32.272	348.299	0.340
6750.000	0.508	24.794	6748.919	31.808	-6.366	31.808	32.439	348.682	0.899