



COMPANY/RIG: Noble Energy/Production/CoreTech
WELL/API: Foss 10-25/05-123-26511
DECLINATION: 8.28
TD AS DRILLED: 7164
COUNTY/STATE: Weld/Colorado
VS-Azi: 0.000 Degrees
Latitude: 40.50406, Longitude: -104.54156
Grid North = True North -0.62 degs (NAD 27)
Grid Correction Applied = -0.62 degs



DEPTH REFERENCE : RKB = GL Elevation = 4818

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyrosurveyrun.ut

Minimum Curvature Method

Report Date/Time: 9/11/2015 / 12:40

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: JUSTIN WILLIAMS

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	0.942	327.531	99.995	0.694	-0.441	0.694	0.822	327.531	0.942
200.000	0.543	323.278	199.987	1.767	-1.166	1.767	2.118	326.579	0.402
300.000	0.483	354.327	299.983	2.567	-1.492	2.567	2.969	329.838	0.281
400.000	0.351	0.806	399.980	3.292	-1.529	3.292	3.630	335.091	0.139
500.000	0.543	358.232	499.977	4.072	-1.539	4.072	4.354	339.296	0.193
600.000	0.398	347.935	599.974	4.886	-1.626	4.886	5.149	341.588	0.168
700.000	0.772	17.550	699.969	5.867	-1.496	5.867	6.055	345.697	0.469
800.000	0.559	19.737	799.962	6.968	-1.128	6.968	7.059	350.806	0.214
900.000	0.575	19.109	899.957	7.902	-0.799	7.902	7.942	354.227	0.017
1000.000	0.645	13.106	999.951	8.924	-0.507	8.924	8.939	356.750	0.094
1100.000	0.943	32.125	1099.942	10.169	0.058	10.169	10.169	0.328	0.394
1200.000	0.807	7.587	1199.931	11.563	0.588	11.563	11.578	2.913	0.395
1300.000	1.008	12.548	1299.918	13.120	0.872	13.120	13.149	3.805	0.216
1400.000	0.813	20.534	1399.905	14.643	1.313	14.643	14.702	5.122	0.232
1500.000	1.044	11.693	1499.892	16.199	1.746	16.199	16.293	6.152	0.271
1600.000	0.797	10.214	1599.879	17.776	2.054	17.776	17.894	6.591	0.248
1700.000	0.878	7.657	1699.868	19.220	2.279	19.220	19.355	6.763	0.089
1800.000	0.686	33.191	1799.859	20.481	2.709	20.481	20.659	7.535	0.393

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	0.525	76.390	1899.854	21.089	3.482	21.089	21.375	9.376	0.470
2000.000	0.393	87.046	1999.851	21.215	4.270	21.215	21.640	11.379	0.157
2100.000	0.709	155.275	2099.847	20.671	4.871	20.671	21.237	13.259	0.671
2200.000	1.053	161.123	2199.835	19.240	5.426	19.240	19.990	15.751	0.355
2300.000	1.184	169.148	2299.816	17.356	5.918	17.356	18.337	18.828	0.204
2400.000	1.464	186.350	2399.790	15.072	5.971	15.072	16.212	21.613	0.484
2500.000	1.910	192.625	2499.746	12.176	5.466	12.176	13.347	24.175	0.482
2600.000	1.751	198.987	2599.695	9.106	4.604	9.106	10.204	26.825	0.258
2700.000	1.488	190.613	2699.656	6.385	3.868	6.385	7.465	31.210	0.353
2800.000	1.191	196.353	2799.628	4.112	3.337	4.112	5.295	39.058	0.326
2900.000	1.042	216.199	2899.610	2.381	2.507	2.381	3.458	46.475	0.412
3000.000	1.054	208.822	2999.593	0.842	1.527	0.842	1.744	61.126	0.135
3100.000	1.111	217.431	3099.575	-0.733	0.494	-0.733	0.885	146.013	0.172
3200.000	1.326	223.915	3199.552	-2.337	-0.897	-2.337	2.503	201.005	0.255
3300.000	1.665	220.689	3299.518	-4.272	-2.647	-4.272	5.026	211.784	0.349
3400.000	1.707	229.565	3399.475	-6.340	-4.728	-6.340	7.908	216.714	0.264
3500.000	1.826	225.317	3499.428	-8.426	-6.994	-8.426	10.951	219.695	0.177
3600.000	2.130	228.011	3599.368	-10.790	-9.508	-10.790	14.381	221.388	0.317
3700.000	2.250	227.657	3699.295	-13.355	-12.340	-13.355	18.183	222.739	0.121
3800.000	2.337	221.695	3799.215	-16.199	-15.147	-16.199	22.178	223.078	0.254
3900.000	2.651	224.563	3899.120	-19.370	-18.126	-19.370	26.528	223.101	0.338
4000.000	3.143	221.707	3998.992	-23.064	-21.573	-23.064	31.581	223.087	0.512
4100.000	3.550	219.123	4098.821	-27.513	-25.351	-27.513	37.411	222.658	0.434
4200.000	3.628	225.474	4198.626	-32.133	-29.560	-32.133	43.662	222.612	0.405
4300.000	3.573	224.104	4298.428	-36.590	-33.985	-36.590	49.938	222.886	0.102
4400.000	3.545	219.864	4398.235	-41.201	-38.136	-41.201	56.141	222.787	0.265
4500.000	3.011	218.256	4498.072	-45.637	-41.743	-45.637	61.848	222.449	0.542
4600.000	3.162	224.076	4597.927	-49.680	-45.288	-49.680	67.224	222.352	0.348
4700.000	3.855	225.815	4697.739	-54.004	-49.616	-54.004	73.336	222.575	0.701
4800.000	3.963	223.091	4797.506	-58.870	-54.388	-58.870	80.148	222.733	0.215
4900.000	3.738	221.105	4897.280	-63.850	-58.892	-63.850	86.862	222.687	0.261
5000.000	3.063	224.727	4997.104	-68.205	-62.915	-68.205	92.791	222.690	0.708
5100.000	3.107	226.895	5096.959	-71.955	-66.774	-71.955	98.165	222.861	0.125
5200.000	3.094	229.747	5196.813	-75.551	-70.813	-75.551	103.549	223.146	0.155
5300.000	2.845	233.320	5296.678	-78.777	-74.863	-78.777	108.675	223.540	0.311
5400.000	2.757	238.660	5396.559	-81.511	-78.907	-81.511	113.447	224.070	0.275
5500.000	2.560	242.238	5496.451	-83.802	-82.937	-83.802	117.904	224.703	0.257
5600.000	2.393	244.750	5596.358	-85.732	-86.801	-85.732	122.002	225.355	0.199
5700.000	2.085	248.557	5696.282	-87.288	-90.382	-87.288	125.651	225.998	0.342
5800.000	1.862	247.875	5796.222	-88.565	-93.580	-88.565	128.845	226.577	0.224

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	1.525	252.566	5896.179	-89.575	-96.355	-89.575	131.560	227.088	0.363
6000.000	1.364	268.165	5996.147	-90.012	-98.815	-90.012	133.666	227.669	0.423
6100.000	1.125	277.362	6096.124	-89.924	-100.978	-89.924	135.215	228.314	0.311
6200.000	1.163	275.710	6196.104	-89.698	-102.962	-89.698	136.553	228.939	0.050
6300.000	0.705	284.045	6296.090	-89.447	-104.569	-89.447	137.606	229.457	0.477
6400.000	0.818	300.402	6396.081	-88.937	-105.781	-88.937	138.200	229.944	0.244
6500.000	1.130	292.413	6496.067	-88.200	-107.308	-88.200	138.904	230.582	0.340
6600.000	0.586	306.527	6596.055	-87.519	-108.631	-87.519	139.500	231.143	0.580
6700.000	0.630	316.268	6696.050	-86.817	-109.422	-86.817	139.680	231.571	0.112
6800.000	0.846	297.660	6796.041	-86.077	-110.457	-86.077	140.035	232.071	0.320
6900.000	1.156	285.633	6896.026	-85.462	-112.082	-85.462	140.948	232.675	0.373