



COMPANY/RIG: Noble Energy/Production/CoreTech

WELL: Gurtler H24-23

DECLINATION: 8.33

TD AS DRILLED: 7200

COUNTY/STATE: Weld/Colorado

Latitude: 40.207, Longitude: -104.607

GRID North is 0.580 Degrees East of True North

VS-Azi: 0.000 Degrees



DEPTH REFERENCE : RKB = GL Elevation = 4793

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro.ut

Minimum Curvature Method

Report Date/Time: 10/2/2014 / 15:47

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	0.040	290.907	100.000	0.012	-0.033	0.012	0.035	290.907	0.040
200.000	0.395	166.323	199.999	-0.310	0.016	-0.310	0.311	177.005	0.419
300.000	0.356	300.059	299.998	-0.490	-0.171	-0.490	0.519	199.212	0.691
400.000	0.336	83.132	399.998	-0.300	-0.148	-0.300	0.334	206.282	0.656
500.000	0.361	59.966	499.996	-0.107	0.416	-0.107	0.430	104.401	0.142
600.000	0.530	177.072	599.994	-0.411	0.712	-0.411	0.823	119.998	0.765
700.000	1.167	174.259	699.983	-1.886	0.838	-1.886	2.064	156.049	0.638
800.000	1.083	136.819	799.965	-3.588	1.586	-3.588	3.923	156.151	0.726
900.000	0.927	181.634	899.951	-5.086	2.209	-5.086	5.545	156.518	0.779
1000.000	1.099	148.901	999.936	-6.716	2.682	-6.716	7.231	158.233	0.594
1100.000	0.817	160.549	1099.922	-8.209	3.414	-8.209	8.891	157.417	0.341
1200.000	0.680	174.910	1199.913	-9.472	3.704	-9.472	10.171	158.641	0.231
1300.000	0.545	160.904	1299.908	-10.513	3.913	-10.513	11.217	159.586	0.200
1400.000	0.588	157.281	1399.903	-11.436	4.266	-11.436	12.206	159.541	0.056
1500.000	0.517	181.014	1499.898	-12.360	4.457	-12.360	13.139	160.173	0.238
1600.000	0.429	182.886	1599.895	-13.185	4.430	-13.185	13.909	161.430	0.090
1700.000	0.426	192.720	1699.892	-13.921	4.329	-13.921	14.579	162.726	0.073
1800.000	0.477	184.981	1799.889	-14.698	4.211	-14.698	15.289	164.012	0.079
1900.000	0.255	275.868	1899.888	-15.090	3.954	-15.090	15.599	165.318	0.544

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	0.679	334.918	1999.884	-14.530	3.481	-14.530	14.941	166.528	0.590
2100.000	0.888	40.142	2099.877	-13.401	3.729	-13.401	13.910	164.449	0.863
2200.000	0.917	75.944	2199.865	-12.614	5.005	-12.614	13.571	158.360	0.555
2300.000	1.127	41.715	2299.850	-11.686	6.435	-11.686	13.340	151.161	0.634
2400.000	1.396	53.893	2399.826	-10.234	8.073	-10.234	13.035	141.731	0.379
2500.000	1.280	61.806	2499.799	-8.988	10.042	-8.988	13.477	131.830	0.218
2600.000	1.370	35.012	2599.773	-7.481	11.713	-7.481	13.898	122.566	0.620
2700.000	1.488	45.136	2699.742	-5.586	13.319	-5.586	14.443	112.753	0.278
2800.000	1.250	22.109	2799.714	-3.660	14.650	-3.660	15.100	104.026	0.594
2900.000	1.140	3.198	2899.693	-1.655	15.116	-1.655	15.206	96.250	0.407
3000.000	1.045	23.981	2999.675	0.172	15.542	0.172	15.543	89.367	0.405
3100.000	1.121	349.295	3099.658	1.966	15.731	1.966	15.854	82.877	0.650
3200.000	1.238	346.659	3199.637	3.978	15.301	3.978	15.809	75.427	0.129
3300.000	1.077	320.950	3299.617	5.759	14.459	5.759	15.564	68.283	0.538
3400.000	1.036	319.959	3399.600	7.181	13.285	7.181	15.102	61.606	0.045
3500.000	1.272	309.271	3499.580	8.576	11.844	8.576	14.623	54.093	0.318
3600.000	0.687	309.355	3599.565	9.659	10.521	9.659	14.282	47.448	0.584
3700.000	0.885	309.632	3699.555	10.532	9.463	10.532	14.158	41.940	0.198
3800.000	1.093	313.329	3799.541	11.679	8.174	11.679	14.255	34.987	0.218
3900.000	0.880	323.399	3899.526	12.950	7.022	12.950	14.731	28.469	0.274
4000.000	0.537	332.531	3999.518	13.982	6.348	13.982	15.356	24.420	0.360
4100.000	0.514	90.200	4099.516	14.396	6.581	14.396	15.829	24.568	0.899
4200.000	0.790	105.443	4199.509	14.210	7.694	14.210	16.160	28.434	0.323
4300.000	0.935	114.727	4299.498	13.686	9.100	13.686	16.435	33.621	0.201
4400.000	1.006	81.142	4399.484	13.479	10.709	13.479	17.216	38.465	0.565
4500.000	0.730	59.822	4499.473	13.935	12.127	13.935	18.473	41.032	0.420
4600.000	0.971	16.511	4599.463	15.068	12.919	15.068	19.848	40.609	0.667
4700.000	1.728	356.306	4699.435	17.385	13.062	17.385	21.745	36.920	0.883
4800.000	2.142	354.723	4799.378	20.750	12.793	20.750	24.377	31.656	0.417
4900.000	1.506	331.147	4899.328	23.762	11.988	23.762	26.614	26.771	0.971
5000.000	1.288	347.355	4999.299	26.009	11.108	26.009	28.282	23.126	0.449
5100.000	1.274	27.661	5099.276	28.091	11.377	28.091	30.307	22.049	0.883
5200.000	0.718	52.860	5199.261	29.453	12.393	29.453	31.954	22.819	0.695
5300.000	0.307	263.665	5299.258	29.802	12.626	29.802	32.366	22.960	0.994
5400.000	0.609	214.831	5399.255	29.336	12.056	29.336	31.717	22.340	0.468
5500.000	0.400	227.011	5499.252	28.662	11.497	28.662	30.881	21.857	0.234
5600.000	0.376	53.586	5599.251	28.618	11.505	28.618	30.844	21.901	0.775
5700.000	0.365	20.198	5699.249	29.112	11.879	29.112	31.443	22.198	0.213
5800.000	0.159	73.980	5799.248	29.450	12.123	29.450	31.847	22.374	0.300
5900.000	0.514	128.817	5899.246	29.207	12.606	29.207	31.811	23.345	0.442

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	0.386	169.067	5999.243	28.595	13.019	28.595	31.420	24.479	0.332
6100.000	0.248	182.868	6099.242	28.048	13.072	28.048	30.945	24.988	0.156
6200.000	0.498	174.140	6199.240	27.400	13.106	27.400	30.373	25.562	0.255
6300.000	0.518	167.863	6299.236	26.526	13.245	26.526	29.649	26.534	0.059
6400.000	0.262	110.195	6399.234	26.005	13.555	26.005	29.325	27.530	0.438
6500.000	0.538	170.957	6499.231	25.462	13.843	25.462	28.982	28.532	0.470
6600.000	0.430	102.406	6599.229	24.917	14.283	24.917	28.721	29.822	0.553
6700.000	0.547	183.667	6699.226	24.361	14.619	24.361	28.410	30.967	0.642
6800.000	0.490	195.638	6799.222	23.473	14.473	23.473	27.576	31.657	0.122
6900.000	0.561	71.266	6899.220	23.218	14.821	23.218	27.545	32.552	0.931
6950.000	0.591	106.814	6949.217	23.222	15.300	23.222	27.809	33.379	0.706