



COMPANY/RIG: Noble Energy/Production/CoreTech
WELL/API: Loloff B 35-17/05-123-26636
DECLINATION: 8.17 Degrees
TD AS DRILLED: 6869 Feet
COUNTY/STATE: Weld/Colorado
VS-Azi: 0.000 Degrees
Latitude: 40.35987, Longitude: -104.51212
Grid North = True North -0.64 degs (NAD 27)
Grid Correction Applied = -0.64 degs



DEPTH REFERENCE : RKB = GL Elevation = 4595

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyrosurvey.ut

Minimum Curvature Method

Report Date/Time: 6/28/2016 / 10:18

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: JUSTIN WILLIAMS / Loloff B 35-17

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	0.932	279.758	99.996	0.138	-0.802	0.138	0.814	279.758	0.932
200.000	0.619	278.214	199.986	0.353	-2.138	0.353	2.167	279.373	0.314
300.000	0.576	263.668	299.981	0.375	-3.173	0.375	3.195	276.736	0.157
400.000	0.389	255.240	399.977	0.233	-4.001	0.233	4.008	273.330	0.200
500.000	0.326	265.315	499.975	0.123	-4.613	0.123	4.615	271.528	0.089
600.000	0.374	261.038	599.974	0.049	-5.219	0.049	5.219	270.538	0.055
700.000	0.616	244.187	699.970	-0.236	-6.026	-0.236	6.031	267.756	0.280
800.000	0.959	244.622	799.960	-0.829	-7.266	-0.829	7.313	263.492	0.342
900.000	1.083	234.671	899.944	-1.734	-8.793	-1.734	8.962	258.845	0.216
1000.000	0.973	231.332	999.928	-2.811	-10.227	-2.811	10.606	254.632	0.125
1100.000	0.937	233.955	1099.914	-3.822	-11.550	-3.822	12.166	251.690	0.057
1200.000	1.008	226.712	1199.900	-4.906	-12.851	-4.906	13.756	249.106	0.142
1300.000	0.662	238.682	1299.889	-5.809	-13.984	-5.809	15.143	247.443	0.386
1400.000	0.522	252.550	1399.884	-6.246	-14.912	-6.246	16.167	247.275	0.199
1500.000	0.475	251.030	1499.880	-6.517	-15.738	-6.517	17.034	247.507	0.048
1600.000	0.172	353.259	1599.879	-6.502	-16.148	-6.502	17.408	248.067	0.539
1700.000	0.465	60.462	1699.878	-6.153	-15.813	-6.153	16.968	248.738	0.429
1800.000	0.207	116.084	1799.876	-6.033	-15.298	-6.033	16.444	248.479	0.388

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	0.393	50.292	1899.875	-5.893	-14.872	-5.893	15.997	248.384	0.361
2000.000	0.141	9.464	1999.874	-5.553	-14.588	-5.553	15.609	249.161	0.301
2100.000	0.083	89.179	2099.874	-5.431	-14.495	-5.431	15.479	249.461	0.150
2200.000	0.525	101.804	2199.872	-5.523	-13.974	-5.523	15.026	248.432	0.444
2300.000	1.248	128.195	2299.860	-6.291	-12.669	-6.291	14.145	243.595	0.812
2400.000	1.584	135.839	2399.829	-7.955	-10.851	-7.955	13.455	233.753	0.385
2500.000	1.545	137.464	2499.792	-9.940	-8.977	-9.940	13.393	222.084	0.059
2600.000	1.498	147.893	2599.757	-12.041	-7.370	-12.041	14.117	211.472	0.280
2700.000	1.358	154.097	2699.726	-14.214	-6.158	-14.214	15.491	203.423	0.208
2800.000	1.099	156.966	2799.703	-16.163	-5.265	-16.163	16.999	198.043	0.267
2900.000	0.972	154.877	2899.686	-17.813	-4.530	-17.813	18.380	194.268	0.132
3000.000	0.856	158.045	2999.674	-19.273	-3.891	-19.273	19.662	191.413	0.127
3100.000	0.918	164.245	3099.662	-20.736	-3.394	-20.736	21.012	189.296	0.114
3200.000	1.018	132.142	3199.648	-22.103	-2.518	-22.103	22.246	186.500	0.544
3300.000	0.954	139.305	3299.633	-23.329	-1.317	-23.329	23.367	183.231	0.139
3400.000	1.502	152.204	3399.610	-25.120	-0.163	-25.120	25.121	180.372	0.611
3500.000	1.523	156.800	3499.575	-27.501	0.972	-27.501	27.518	177.976	0.123
3600.000	1.686	166.218	3599.536	-30.152	1.846	-30.152	30.208	176.497	0.309
3700.000	1.931	157.516	3699.487	-33.137	2.841	-33.137	33.259	175.101	0.367
3800.000	1.786	182.433	3799.436	-36.251	3.419	-36.251	36.412	174.613	0.814
3900.000	2.372	173.392	3899.370	-39.865	3.591	-39.865	40.026	174.853	0.670
4000.000	3.110	184.163	3999.255	-44.627	3.632	-44.627	44.774	175.347	0.897
4100.000	2.406	193.244	4099.139	-49.376	2.954	-49.376	49.464	176.576	0.827
4200.000	1.730	203.956	4199.074	-52.799	1.860	-52.799	52.832	177.982	0.776
4300.000	2.106	221.895	4299.018	-55.547	0.020	-55.547	55.547	179.979	0.704
4400.000	2.802	236.393	4398.927	-58.267	-3.243	-58.267	58.357	183.185	0.927
4500.000	2.609	253.415	4498.817	-60.270	-7.460	-60.270	60.730	187.056	0.823
4600.000	1.654	261.322	4598.747	-61.138	-11.069	-61.138	62.131	190.262	0.998
4700.000	0.973	273.458	4698.720	-61.304	-13.343	-61.304	62.739	192.279	0.732
4800.000	0.587	271.655	4798.711	-61.238	-14.703	-61.238	62.978	193.501	0.386
4900.000	0.444	229.344	4898.707	-61.476	-15.509	-61.476	63.402	194.159	0.396
5000.000	0.645	207.259	4998.703	-62.229	-16.061	-62.229	64.268	194.472	0.287
5100.000	0.951	204.658	5098.693	-63.483	-16.665	-63.483	65.634	194.709	0.308
5200.000	1.098	198.070	5198.677	-65.148	-17.308	-65.148	67.408	194.878	0.189
5300.000	1.040	162.839	5298.660	-66.927	-17.338	-66.927	69.136	194.523	0.650
5400.000	0.626	170.875	5398.650	-68.334	-16.983	-68.334	70.413	193.957	0.430
5500.000	0.781	134.982	5498.643	-69.355	-16.414	-69.355	71.271	193.315	0.458
5600.000	0.417	174.602	5598.637	-70.200	-15.898	-70.200	71.977	192.760	0.531
5700.000	0.190	158.016	5698.636	-70.715	-15.802	-70.715	72.459	192.596	0.242
5800.000	0.429	189.518	5798.634	-71.238	-15.802	-71.238	72.970	192.507	0.285

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	0.114	345.267	5898.634	-71.511	-15.889	-71.511	73.255	192.527	0.535
6000.000	0.346	255.606	5998.633	-71.490	-16.207	-71.490	73.304	192.773	0.364
6100.000	0.247	232.088	6098.632	-71.698	-16.670	-71.698	73.610	193.089	0.155
6200.000	0.172	245.717	6198.631	-71.892	-16.976	-71.892	73.869	193.286	0.090
6300.000	0.125	161.637	6298.631	-72.057	-17.079	-72.057	74.053	193.334	0.201
6400.000	0.174	341.233	6398.631	-72.016	-17.094	-72.016	74.017	193.353	0.299
6500.000	0.367	105.632	6498.630	-71.958	-16.834	-71.958	73.901	193.167	0.487
6600.000	0.290	127.932	6598.628	-72.200	-16.327	-72.200	74.023	192.742	0.147