



COMPANY/RIG: Noble Energy/Production/CoreTech
WELL/API: Klein B19-6/05-123-23345
DECLINATION: 8.23 Degrees
TD AS DRILLED: 7036 Feet
COUNTY/STATE: Weld/Colorado
VS-Azi: 0.000 Degrees
Latitude: 40.38684, Longitude: -104.59442
Grid North = True North -0.59 degs (NAD 27)
Grid Correction Applied = -0.59 degs



DEPTH REFERENCE : RKB = GL Elevation = 4623

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyrosurvey.ut

Minimum Curvature Method

Report Date/Time: 5/25/2016 / 16:04

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: JUSTIN WILLIAMS / Klein B 19-6

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	0.799	66.578	99.997	0.277	0.640	0.277	0.697	66.578	0.799
200.000	0.508	71.198	199.990	0.697	1.699	0.697	1.836	67.691	0.296
300.000	0.741	68.228	299.984	1.079	2.718	1.079	2.925	68.341	0.235
400.000	0.306	84.980	399.980	1.342	3.584	1.342	3.827	69.467	0.456
500.000	0.153	359.427	499.979	1.499	3.849	1.499	4.131	68.718	0.331
600.000	0.228	33.401	599.979	1.799	3.957	1.799	4.347	65.554	0.133
700.000	0.250	1.632	699.978	2.183	4.073	2.183	4.621	61.806	0.133
800.000	0.438	328.249	799.976	2.727	3.878	2.727	4.741	54.887	0.267
900.000	0.257	310.781	899.974	3.198	3.507	3.198	4.747	47.637	0.208
1000.000	0.167	340.835	999.974	3.482	3.290	3.482	4.790	43.374	0.140
1100.000	0.270	1.122	1099.973	3.855	3.247	3.855	5.040	40.105	0.127
1200.000	0.323	332.872	1199.972	4.341	3.123	4.341	5.348	35.732	0.153
1300.000	0.291	339.488	1299.970	4.829	2.906	4.829	5.636	31.034	0.047
1400.000	0.173	306.173	1399.969	5.156	2.695	5.156	5.818	27.593	0.175
1500.000	0.301	257.974	1499.969	5.190	2.316	5.190	5.684	24.045	0.226
1600.000	0.458	255.994	1599.966	5.039	1.671	5.039	5.309	18.342	0.157
1700.000	0.421	289.492	1699.964	5.065	0.937	5.065	5.150	10.477	0.256
1800.000	0.511	329.638	1799.960	5.572	0.365	5.572	5.584	3.747	0.331

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	0.600	336.831	1899.956	6.439	-0.067	6.439	6.439	359.407	0.112
2000.000	0.610	340.580	1999.950	7.421	-0.449	7.421	7.435	356.534	0.041
2100.000	0.541	2.695	2099.945	8.395	-0.604	8.395	8.416	355.884	0.231
2200.000	0.711	358.722	2199.939	9.487	-0.596	9.487	9.506	356.406	0.176
2300.000	0.816	10.488	2299.930	10.807	-0.480	10.807	10.818	357.456	0.188
2400.000	0.576	1.471	2399.923	12.009	-0.338	12.009	12.014	358.390	0.263
2500.000	0.776	15.683	2499.916	13.164	-0.142	13.164	13.165	359.383	0.260
2600.000	0.600	354.170	2599.909	14.337	-0.012	14.337	14.337	359.953	0.310
2700.000	0.831	10.185	2699.901	15.571	0.063	15.571	15.571	0.233	0.304
2800.000	0.657	325.769	2799.894	16.759	-0.131	16.759	16.759	359.553	0.585
2900.000	0.389	298.230	2899.889	17.393	-0.752	17.393	17.409	357.524	0.360
3000.000	0.241	322.824	2999.888	17.722	-1.179	17.722	17.761	356.195	0.197
3100.000	0.256	268.676	3099.887	17.884	-1.530	17.884	17.950	355.111	0.227
3200.000	0.271	248.237	3199.886	17.791	-1.973	17.791	17.900	353.671	0.095
3300.000	0.235	261.771	3299.885	17.674	-2.396	17.674	17.836	352.281	0.070
3400.000	0.552	255.062	3399.883	17.521	-3.064	17.521	17.787	350.080	0.320
3500.000	0.836	258.756	3499.875	17.254	-4.245	17.254	17.769	346.177	0.287
3600.000	0.979	261.951	3599.863	16.992	-5.807	16.992	17.957	341.133	0.151
3700.000	1.072	262.613	3699.847	16.752	-7.580	16.752	18.388	335.653	0.094
3800.000	0.927	259.612	3799.831	16.486	-9.304	16.486	18.930	330.562	0.155
3900.000	0.880	260.753	3899.819	16.217	-10.857	16.217	19.516	326.199	0.050
4000.000	0.746	264.137	3999.809	16.027	-12.262	16.027	20.180	322.582	0.142
4100.000	0.750	277.704	4099.800	16.049	-13.557	16.049	21.008	319.811	0.177
4200.000	0.791	252.915	4199.792	15.933	-14.865	15.933	21.791	316.987	0.333
4300.000	0.902	265.406	4299.781	15.668	-16.309	15.668	22.615	313.851	0.215
4400.000	0.912	276.303	4399.768	15.692	-17.884	15.692	23.793	311.264	0.173
4500.000	0.872	266.338	4499.756	15.731	-19.435	15.731	25.003	308.987	0.160
4600.000	0.632	262.754	4599.748	15.613	-20.742	15.613	25.961	306.969	0.244
4700.000	0.910	266.137	4699.738	15.490	-22.082	15.490	26.973	305.048	0.281
4800.000	0.763	249.991	4799.728	15.208	-23.500	15.208	27.991	302.910	0.276
4900.000	0.687	262.128	4899.720	14.898	-24.719	14.898	28.861	301.078	0.171
5000.000	0.485	243.285	4999.715	14.626	-25.690	14.626	29.562	299.654	0.276
5100.000	0.424	260.721	5099.712	14.376	-26.433	14.376	30.089	298.541	0.150
5200.000	0.233	213.479	5199.710	14.147	-26.910	14.147	30.402	297.732	0.316
5300.000	0.256	193.276	5299.709	13.761	-27.073	13.761	30.370	296.943	0.089
5400.000	0.040	27.954	5399.709	13.574	-27.108	13.574	30.317	296.598	0.295
5500.000	0.202	317.907	5499.709	13.735	-27.210	13.735	30.480	296.783	0.192
5600.000	0.653	323.488	5599.706	14.323	-27.667	14.323	31.154	297.371	0.453
5700.000	0.911	323.428	5699.696	15.419	-28.479	15.419	32.385	298.432	0.258
5800.000	1.225	320.932	5799.679	16.888	-29.627	16.888	34.102	299.684	0.318

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	1.519	319.432	5899.650	18.725	-31.163	18.725	36.355	301.001	0.296
6000.000	1.420	314.659	5999.617	20.602	-32.906	20.602	38.823	302.051	0.158
6100.000	1.118	309.647	6099.593	22.096	-34.538	22.096	41.001	302.609	0.321
6200.000	1.221	281.859	6199.573	22.938	-36.333	22.938	42.968	302.265	0.571
6300.000	0.949	270.458	6299.555	23.163	-38.204	23.163	44.677	301.229	0.346
6400.000	0.510	208.393	6399.548	22.778	-39.244	22.778	45.375	300.132	0.841
6500.000	0.950	176.035	6499.540	21.560	-39.398	21.560	44.911	298.689	0.586
6600.000	1.378	170.517	6599.519	19.546	-39.142	19.546	43.751	296.536	0.442
6700.000	1.390	183.941	6699.490	17.150	-39.028	17.150	42.629	293.722	0.324
6800.000	0.989	174.008	6799.468	15.082	-39.021	15.082	41.834	291.132	0.450