



COMPANY/RIG: Noble Energy/Production/CoreTech
WELL/API: Blake B 29-23/05-123-22190
DECLINATION: 8.21 Degrees
TD AS DRILLED: 7595 Feet
COUNTY/STATE: Weld/Colorado
VS-Azi: 0.000 Degrees
Latitude: 40.36733, Longitude: -104.57099
Grid North = True North -0.60 degs (NAD 27)
Grid Correction Applied = -0.60 degs



DEPTH REFERENCE : RKB = GL Elevation = 4696

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyrosurvey.ut

Minimum Curvature Method

Report Date/Time: 5/31/2016 / 13:13

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: JUSTIN WILLIAMS / Blake B 29-23

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	0.132	222.422	100.000	-0.085	-0.078	-0.085	0.115	222.422	0.132
200.000	0.213	260.531	199.999	-0.200	-0.338	-0.200	0.393	239.356	0.136
300.000	0.204	225.719	299.999	-0.355	-0.648	-0.355	0.739	241.299	0.125
400.000	0.208	124.702	399.998	-0.583	-0.626	-0.583	0.855	227.072	0.318
500.000	0.269	120.621	499.998	-0.806	-0.275	-0.806	0.851	198.853	0.063
600.000	0.285	98.747	599.996	-0.963	0.173	-0.963	0.978	169.817	0.106
700.000	0.038	149.019	699.996	-1.029	0.436	-1.029	1.118	157.033	0.263
800.000	0.118	20.683	799.996	-0.961	0.490	-0.961	1.079	153.001	0.145
900.000	0.091	97.520	899.996	-0.875	0.605	-0.875	1.064	145.342	0.132
1000.000	0.473	206.088	999.995	-1.256	0.502	-1.256	1.353	158.210	0.510
1100.000	0.315	204.670	1099.992	-1.877	0.206	-1.877	1.889	173.745	0.158
1200.000	0.377	213.200	1199.990	-2.403	-0.089	-2.403	2.405	182.131	0.080
1300.000	0.363	238.980	1299.988	-2.841	-0.541	-2.841	2.892	190.776	0.166
1400.000	0.374	282.445	1399.987	-2.934	-1.130	-2.934	3.144	201.069	0.273
1500.000	0.365	337.814	1499.985	-2.569	-1.569	-2.569	3.010	211.418	0.343
1600.000	0.413	1.593	1599.983	-1.914	-1.679	-1.914	2.546	221.267	0.167
1700.000	0.440	11.118	1699.980	-1.177	-1.595	-1.177	1.983	233.580	0.076
1800.000	0.642	37.719	1799.975	-0.357	-1.178	-0.357	1.231	253.158	0.317

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	1.232	56.747	1899.962	0.676	0.064	0.676	0.679	5.388	0.659
2000.000	1.689	65.715	1999.929	1.872	2.306	1.872	2.970	50.933	0.509
2100.000	1.826	82.042	2099.883	2.699	5.227	2.699	5.883	62.696	0.517
2200.000	1.930	85.136	2199.829	3.062	8.484	3.062	9.019	70.154	0.145
2300.000	1.998	81.202	2299.770	3.471	11.884	3.471	12.381	73.717	0.151
2400.000	1.890	72.620	2399.713	4.231	15.181	4.231	15.760	74.428	0.310
2500.000	1.871	67.854	2499.659	5.338	18.267	5.338	19.031	73.709	0.158
2600.000	1.671	59.213	2599.612	6.700	21.031	6.700	22.072	72.329	0.333
2700.000	1.405	56.322	2699.576	8.126	23.303	8.126	24.679	70.777	0.277
2800.000	1.239	58.394	2799.549	9.372	25.244	9.372	26.927	69.632	0.172
2900.000	1.270	56.755	2899.525	10.547	27.092	10.547	29.072	68.730	0.047
3000.000	1.278	57.170	2999.500	11.759	28.956	11.759	31.252	67.898	0.012
3100.000	1.291	64.288	3099.475	12.852	30.908	12.852	33.473	67.422	0.160
3200.000	1.242	57.341	3199.451	13.925	32.835	13.925	35.666	67.018	0.161
3300.000	1.336	33.843	3299.426	15.478	34.396	15.478	37.719	65.772	0.533
3400.000	1.446	29.078	3399.397	17.550	35.659	17.550	39.744	63.796	0.160
3500.000	1.102	19.759	3499.372	19.558	36.597	19.558	41.496	61.880	0.401
3600.000	1.091	26.827	3599.354	21.312	37.352	21.312	43.005	60.292	0.136
3700.000	1.006	18.664	3699.337	22.993	38.062	22.993	44.468	58.865	0.172
3800.000	0.885	23.092	3799.323	24.535	38.646	24.535	45.777	57.590	0.141
3900.000	0.577	25.774	3899.315	25.699	39.168	25.699	46.846	56.730	0.310
4000.000	0.372	64.595	3999.312	26.292	39.681	26.292	47.601	56.472	0.370
4100.000	0.392	56.127	4099.310	26.622	40.258	26.622	48.265	56.524	0.060
4200.000	0.720	16.318	4199.305	27.416	40.719	27.416	49.089	56.048	0.488
4300.000	0.847	26.429	4299.296	28.681	41.225	28.681	50.220	55.173	0.187
4400.000	0.818	41.833	4399.285	29.874	42.029	29.874	51.565	54.595	0.225
4500.000	1.187	91.910	4499.272	30.372	43.541	30.372	53.087	55.103	0.912
4600.000	1.901	117.274	4599.236	29.577	46.051	29.577	54.731	57.289	0.972
4700.000	2.461	121.377	4699.163	27.699	49.358	27.699	56.599	60.700	0.581
4800.000	2.518	144.156	4799.071	24.800	52.478	24.800	58.043	64.705	0.984
4900.000	2.579	147.265	4898.972	21.127	54.981	21.127	58.900	68.980	0.151
5000.000	2.158	152.171	4998.887	17.569	57.076	17.569	59.719	72.890	0.467
5100.000	1.458	170.154	5098.837	14.651	58.173	14.651	59.989	75.864	0.893
5200.000	0.951	183.741	5198.815	12.569	58.336	12.569	59.675	77.841	0.579
5300.000	0.774	211.651	5298.804	11.166	57.928	11.166	58.994	79.089	0.450
5400.000	0.846	235.406	5398.794	10.172	56.966	10.172	57.867	79.876	0.341
5500.000	1.418	250.479	5498.774	9.340	55.192	9.340	55.977	80.395	0.640
5600.000	1.515	225.296	5598.743	7.997	53.087	7.997	53.686	81.434	0.646
5700.000	1.537	193.293	5698.709	5.761	51.839	5.761	52.158	83.658	0.842
5800.000	1.962	164.109	5798.664	2.809	51.999	2.809	52.075	86.908	0.973

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	2.156	150.665	5898.600	-0.478	53.390	-0.478	53.392	90.513	0.519
6000.000	2.208	146.481	5998.528	-3.724	55.375	-3.724	55.500	93.847	0.167
6100.000	2.426	146.928	6098.446	-7.104	57.594	-7.104	58.030	97.031	0.219
6200.000	2.648	140.088	6198.348	-10.649	60.231	-10.649	61.165	100.026	0.375
6300.000	2.827	136.741	6298.234	-14.217	63.403	-14.217	64.977	102.638	0.240
6400.000	2.904	137.331	6398.109	-17.875	66.810	-17.875	69.160	104.979	0.082
6500.000	3.501	133.308	6497.952	-21.832	70.748	-21.832	74.040	107.149	0.638
6600.000	3.909	135.350	6597.743	-26.351	75.365	-26.351	79.839	109.272	0.429
6650.000	4.163	132.722	6647.619	-28.794	77.896	-28.794	83.047	110.287	0.628