



Company/Rig: Noble Energy/Production/CoreTech
WELL/API#: CONNELL 01/05-123-10831
DECLINATION: 8.09 Degrees
TD AS DRILLED: 6965'
COUNTY/STATE: WELD/COLORADO
VS-Azi: 0.000 Degrees
Latitude: 40.34673, Longitude: -104.56242
Grid North = True North -0.61 degs (NAD 27)
Grid Correction Applied = -0.61 degs



Depth Reference : RKB=SURFACE ELEVATION=4697'

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: run1-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 6/15/2017 / 13:36

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

COMMERCE CITY, COLORADO

303-853-4976

Surveyor: JAY HINMAN / Connell 01

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	0.559	232.808	99.998	-0.295	-0.388	-0.295	0.488	232.808	0.559
200.000	0.278	267.105	199.996	-0.602	-1.019	-0.602	1.183	239.438	0.365
300.000	0.140	289.991	299.995	-0.572	-1.376	-0.572	1.491	247.429	0.158
400.000	0.223	350.563	399.995	-0.339	-1.523	-0.339	1.561	257.467	0.196
500.000	0.323	266.478	499.994	-0.164	-1.836	-0.164	1.844	264.886	0.373
600.000	0.639	284.785	599.990	-0.039	-2.657	-0.039	2.657	269.151	0.347
700.000	0.606	309.878	699.985	0.442	-3.602	0.442	3.629	276.998	0.272
800.000	0.402	269.185	799.981	0.776	-4.358	0.776	4.427	280.100	0.399
900.000	0.580	314.817	899.978	1.128	-5.068	1.128	5.192	282.546	0.414
1000.000	0.397	275.160	999.974	1.515	-5.772	1.515	5.968	284.711	0.373
1100.000	0.773	296.949	1099.969	1.853	-6.719	1.853	6.969	285.415	0.431
1200.000	0.492	295.549	1199.963	2.344	-7.708	2.344	8.056	286.912	0.282
1300.000	0.726	293.147	1299.957	2.778	-8.678	2.778	9.112	287.751	0.235
1400.000	0.717	299.367	1399.949	3.334	-9.806	3.334	10.357	288.777	0.079
1500.000	1.191	301.876	1499.935	4.189	-11.233	4.189	11.989	290.452	0.476
1600.000	1.127	312.315	1599.915	5.400	-12.843	5.400	13.933	292.806	0.220

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
1700.000	0.730	313.623	1699.901	6.502	-14.032	6.502	15.466	294.863	0.397
1800.000	0.821	293.984	1799.892	7.233	-15.148	7.233	16.786	295.525	0.279
1900.000	0.567	336.136	1899.885	7.976	-16.002	7.976	17.880	296.495	0.552
2000.000	0.360	325.681	1999.882	8.688	-16.379	8.688	18.541	297.943	0.223
2100.000	0.479	177.879	2099.881	8.529	-16.540	8.529	18.610	297.278	0.806
2200.000	0.376	239.327	2199.879	7.944	-16.807	7.944	18.590	295.298	0.446
2300.000	0.441	143.975	2299.877	7.466	-16.864	7.466	18.442	293.879	0.605
2400.000	0.370	177.377	2399.875	6.832	-16.623	6.832	17.972	292.343	0.243
2500.000	0.635	170.835	2499.871	5.963	-16.520	5.963	17.563	289.847	0.271
2600.000	0.636	173.610	2599.865	4.864	-16.370	4.864	17.077	286.549	0.031
2700.000	0.321	159.912	2699.861	4.050	-16.212	4.050	16.710	284.026	0.333
2800.000	0.827	118.299	2799.856	3.445	-15.480	3.445	15.859	282.545	0.625
2900.000	0.926	108.852	2899.844	2.841	-14.080	2.841	14.364	281.409	0.175
3000.000	0.661	82.044	2999.835	2.660	-12.744	2.660	13.019	281.789	0.450
3100.000	0.500	68.192	3099.830	2.902	-11.767	2.902	12.120	283.853	0.212
3200.000	0.859	94.981	3199.823	2.999	-10.616	2.999	11.031	285.776	0.470
3300.000	0.857	81.731	3299.812	3.042	-9.129	3.042	9.623	288.426	0.198
3400.000	0.783	86.526	3399.802	3.190	-7.708	3.190	8.342	292.486	0.101
3500.000	0.872	48.543	3499.792	3.736	-6.456	3.736	7.459	300.056	0.545
3600.000	0.915	64.741	3599.780	4.580	-5.164	4.580	6.902	311.572	0.255
3700.000	0.966	52.570	3699.767	5.433	-3.772	5.433	6.614	325.229	0.206
3800.000	0.920	63.777	3799.753	6.300	-2.382	6.300	6.736	339.288	0.190
3900.000	0.718	41.785	3899.743	7.123	-1.244	7.123	7.230	350.090	0.370
4000.000	0.798	25.491	3999.734	8.219	-0.527	8.219	8.236	356.332	0.229
4100.000	0.579	70.800	4099.728	9.014	0.250	9.014	9.017	1.587	0.568
4200.000	0.594	53.112	4199.723	9.491	1.142	9.491	9.560	6.858	0.181
4300.000	0.174	252.234	4299.721	9.756	1.412	9.756	9.858	8.233	0.761
4400.000	0.288	110.097	4399.721	9.623	1.503	9.623	9.740	8.877	0.439
4500.000	0.415	288.722	4499.720	9.653	1.396	9.653	9.754	8.228	0.704
4600.000	0.477	283.017	4599.717	9.863	0.647	9.863	9.885	3.753	0.076
4700.000	1.090	250.976	4699.708	9.647	-0.658	9.647	9.670	356.100	0.731
4800.000	1.506	289.693	4799.684	9.780	-2.794	9.780	10.171	344.056	0.946
4900.000	1.529	285.184	4899.649	10.572	-5.319	10.572	11.835	333.293	0.122
5000.000	1.411	271.617	4999.616	10.957	-7.837	10.957	13.471	324.425	0.367
5100.000	0.891	306.284	5099.597	11.451	-9.694	11.451	15.004	319.751	0.846
5200.000	0.619	276.900	5199.588	11.976	-10.857	11.976	16.165	317.807	0.464
5300.000	0.314	236.927	5299.585	11.892	-11.622	11.892	16.628	315.656	0.429
5400.000	0.243	164.952	5399.584	11.538	-11.797	11.538	16.501	314.364	0.332
5500.000	0.569	299.675	5499.583	11.579	-12.173	11.579	16.801	313.567	0.760

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
5600.000	0.488	240.790	5599.579	11.617	-12.976	11.617	17.416	311.838	0.524
5700.000	0.681	297.621	5699.575	11.685	-13.874	11.685	18.139	310.106	0.581
5800.000	0.736	310.692	5799.567	12.379	-14.887	12.379	19.361	309.745	0.170
5900.000	0.431	269.260	5899.562	12.793	-15.750	12.793	20.291	309.086	0.502
6000.000	0.735	291.458	5999.557	13.023	-16.723	13.023	21.196	307.909	0.374
6100.000	0.496	259.200	6099.551	13.177	-17.745	13.177	22.102	306.596	0.412
6200.000	0.478	246.986	6199.548	12.933	-18.554	12.933	22.616	304.878	0.105
6300.000	1.097	264.099	6299.538	12.671	-19.890	12.671	23.583	302.500	0.656
6400.000	0.824	207.109	6399.526	11.933	-21.170	11.933	24.301	299.408	0.947
6500.000	0.537	210.867	6499.519	10.890	-21.738	10.890	24.313	296.610	0.291
6600.000	0.522	281.673	6599.515	10.581	-22.424	10.581	24.795	295.260	0.613
6700.000	0.921	298.786	6699.507	11.060	-23.575	11.060	26.040	295.133	0.449
6800.000	0.444	327.834	6799.500	11.774	-24.485	11.774	27.169	295.682	0.575
6850.000	0.269	5.133	6849.499	12.055	-24.578	12.055	27.375	296.128	0.563