



Company/Rig: Noble Energy/Production/CoreTech
WELL/API#: TENNYSON I 34-19/05-123-21740
DECLINATION: 8.22 Degrees
TD AS DRILLED: 7353'
COUNTY/STATE: WELD/COLORADO
VS-Azi: 0.000 Degrees
Latitude: 40.44850, Longitude: -104.76861
Grid North = True North -0.47 degs (NAD 27)
Grid Correction Applied = -0.47 degs



Depth Reference : RKB=SURFACE ELEVATION=4691'

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: run1-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 5/23/2017 / 09:58

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

COMMERCE CITY, COLORADO

303-853-4976

Surveyor: JAY HINMAN / Tennyson I 34-19

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	0.296	257.155	100.000	-0.057	-0.251	-0.057	0.258	257.155	0.296
200.000	0.335	225.700	199.998	-0.319	-0.712	-0.319	0.780	245.879	0.175
300.000	0.429	262.604	299.996	-0.571	-1.292	-0.571	1.413	246.155	0.258
400.000	0.661	281.583	399.992	-0.504	-2.228	-0.504	2.284	257.262	0.291
500.000	0.822	289.330	499.983	-0.151	-3.469	-0.151	3.473	267.515	0.190
600.000	0.887	275.651	599.972	0.163	-4.916	0.163	4.919	271.899	0.213
700.000	1.009	284.853	699.958	0.465	-6.537	0.465	6.553	274.067	0.195
800.000	0.954	271.725	799.944	0.716	-8.220	0.716	8.251	274.975	0.231
900.000	0.799	272.265	899.932	0.768	-9.748	0.768	9.778	274.505	0.155
1000.000	1.250	289.467	999.916	1.159	-11.473	1.159	11.531	275.769	0.541
1100.000	1.285	298.018	1099.892	2.049	-13.491	2.049	13.646	278.637	0.192
1200.000	1.298	283.456	1199.867	2.839	-15.582	2.839	15.839	280.328	0.328
1300.000	1.173	303.340	1299.844	3.665	-17.538	3.665	17.917	281.805	0.444
1400.000	1.168	300.578	1399.823	4.746	-19.271	4.746	19.847	283.837	0.057
1500.000	1.664	293.079	1499.792	5.834	-21.484	5.834	22.262	285.193	0.528
1600.000	1.715	298.472	1599.749	7.117	-24.135	7.117	25.162	286.429	0.167

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	1.266	282.952	1699.715	8.078	-26.527	8.078	27.730	286.936	0.600
1800.000	0.834	285.605	1799.698	8.521	-28.305	8.521	29.560	286.754	0.434
1900.000	1.027	252.107	1899.686	8.441	-29.860	8.441	31.030	285.786	0.568
2000.000	0.792	239.638	1999.673	7.817	-31.309	7.817	32.270	284.018	0.306
2100.000	0.596	246.199	2099.666	7.257	-32.382	7.257	33.185	282.632	0.211
2200.000	0.785	194.775	2199.659	6.385	-33.032	6.385	33.644	280.941	0.623
2300.000	0.601	177.165	2299.652	5.199	-33.181	5.199	33.586	278.905	0.279
2400.000	0.346	221.602	2399.649	4.450	-33.355	4.450	33.651	277.598	0.429
2500.000	0.307	251.352	2499.647	4.138	-33.810	4.138	34.062	276.978	0.172
2600.000	0.562	282.125	2599.644	4.155	-34.543	4.155	34.792	276.860	0.337
2700.000	0.389	234.680	2699.641	4.062	-35.299	4.062	35.532	276.565	0.414
2800.000	0.715	298.552	2799.637	4.165	-36.124	4.165	36.364	276.576	0.647
2900.000	0.780	282.071	2899.629	4.605	-37.338	4.605	37.621	277.031	0.224
3000.000	0.422	317.611	2999.624	5.020	-38.252	5.020	38.580	277.476	0.500
3100.000	0.386	282.681	3099.621	5.366	-38.829	5.366	39.198	277.868	0.245
3200.000	0.548	232.261	3199.618	5.147	-39.535	5.147	39.869	277.418	0.424
3300.000	0.721	202.678	3299.612	4.274	-40.156	4.274	40.382	276.076	0.364
3400.000	1.034	194.138	3399.601	2.819	-40.618	2.819	40.716	273.970	0.339
3500.000	1.625	203.049	3499.573	0.639	-41.394	0.639	41.399	270.884	0.624
3600.000	1.493	216.183	3599.537	-1.717	-42.718	-1.717	42.753	267.698	0.380
3700.000	1.805	212.541	3699.495	-4.096	-44.334	-4.096	44.523	264.721	0.329
3800.000	1.587	207.012	3799.451	-6.657	-45.810	-6.657	46.291	261.732	0.272
3900.000	1.405	206.495	3899.417	-8.988	-46.986	-8.988	47.838	259.171	0.182
4000.000	1.413	205.987	3999.387	-11.194	-48.073	-11.194	49.359	256.892	0.015
4100.000	1.071	203.028	4099.363	-13.162	-48.979	-13.162	50.717	254.958	0.349
4200.000	0.720	217.282	4199.351	-14.522	-49.725	-14.522	51.802	253.720	0.412
4300.000	0.641	214.253	4299.344	-15.484	-50.421	-15.484	52.745	252.928	0.087
4400.000	0.473	231.662	4399.339	-16.203	-51.059	-16.203	53.568	252.394	0.237
4500.000	0.901	253.478	4499.332	-16.682	-52.136	-16.682	54.740	252.257	0.494
4600.000	1.404	255.096	4599.312	-17.220	-54.073	-17.220	56.749	252.335	0.504
4700.000	2.124	262.070	4699.264	-17.791	-57.093	-17.791	59.801	252.692	0.751
4800.000	1.966	258.704	4799.200	-18.383	-60.611	-18.383	63.337	253.128	0.198
4900.000	2.173	258.383	4899.135	-19.101	-64.150	-19.101	66.933	253.419	0.206
5000.000	2.419	264.011	4999.054	-19.703	-68.106	-19.703	70.899	253.865	0.334
5100.000	1.867	259.351	5098.984	-20.224	-71.806	-20.224	74.600	254.270	0.579
5200.000	1.551	242.911	5198.940	-21.141	-74.612	-21.141	77.550	254.180	0.580
5300.000	1.318	244.429	5298.909	-22.254	-76.855	-22.254	80.012	253.851	0.237
5400.000	1.285	235.920	5398.883	-23.379	-78.820	-23.379	82.215	253.479	0.196
5500.000	1.487	233.651	5498.854	-24.776	-80.795	-24.776	84.508	252.951	0.210

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	1.633	213.317	5598.817	-26.736	-82.623	-26.736	86.841	252.069	0.569
5700.000	1.248	203.880	5698.786	-28.923	-83.846	-28.923	88.695	250.968	0.451
5800.000	1.650	207.513	5798.754	-31.196	-84.952	-31.196	90.499	249.836	0.412
5900.000	1.587	208.118	5898.714	-33.694	-86.270	-33.694	92.617	248.666	0.065
6000.000	1.346	226.378	5998.681	-35.726	-87.773	-35.726	94.765	247.852	0.523
6100.000	1.698	220.391	6098.646	-37.664	-89.583	-37.664	97.178	247.196	0.386
6200.000	1.762	224.099	6198.600	-39.896	-91.612	-39.896	99.923	246.467	0.129
6300.000	1.923	213.179	6298.549	-42.405	-93.600	-42.405	102.758	245.628	0.385
6400.000	2.222	224.329	6398.484	-45.196	-95.873	-45.196	105.992	244.760	0.501
6500.000	2.195	204.234	6498.411	-48.329	-98.014	-48.329	109.282	243.753	0.771
6600.000	2.538	207.276	6598.326	-52.044	-99.815	-52.044	112.568	242.462	0.365
6700.000	2.395	210.033	6698.233	-55.821	-101.876	-55.821	116.167	241.280	0.186
6800.000	2.673	219.243	6798.136	-59.436	-104.397	-59.436	120.130	240.346	0.492