

COMPANY/RIG: Noble Energy/Production/VES

WELL/API: Singer E 34-9/05-123-16702

DECLINATION: 8.07

TD AS DRILLED: 7162

COUNTY/STATE: Weld/Colorado

Latitude: 40.440, Longitude: -104.641

GRID North is 0.550 Degrees East of True North

VS-Azi: 0.000 Degrees



DEPTH REFERENCE : RKB = GL Elevation = 4666

DRILLOG GYRO SURVEY CALCULATIONS

Filename: gyrosurvey.ut

Minimum Curvature Method

Report Date/Time: 3/23/2018 / 08:34

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

JUSTIN WILLIAMS / Singer E 34-9

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	0.537	7.681	99.999	0.464	0.063	0.464	0.468	7.681	0.537
200.000	0.416	349.638	199.995	1.285	0.060	1.285	1.286	2.672	0.191
300.000	0.226	260.208	299.994	1.608	-0.199	1.608	1.621	352.932	0.471
400.000	0.233	256.628	399.993	1.528	-0.591	1.528	1.638	338.851	0.016
500.000	0.117	248.809	499.993	1.444	-0.883	1.444	1.693	328.544	0.118
600.000	0.231	321.523	599.992	1.565	-1.104	1.565	1.916	324.808	0.226
700.000	0.281	226.723	699.992	1.555	-1.408	1.555	2.098	317.836	0.379
800.000	0.278	278.116	799.991	1.421	-1.828	1.421	2.315	307.871	0.243
900.000	0.160	281.518	899.990	1.483	-2.205	1.483	2.657	303.934	0.119
1000.000	0.133	239.718	999.990	1.453	-2.441	1.453	2.841	300.753	0.107
1100.000	0.257	296.313	1099.989	1.494	-2.743	1.494	3.123	298.572	0.215
1200.000	0.208	297.792	1199.988	1.677	-3.104	1.677	3.528	298.388	0.050
1300.000	0.119	7.546	1299.988	1.865	-3.251	1.865	3.748	299.840	0.200

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
1400.000	0.298	359.897	1399.987	2.227	-3.238	2.227	3.930	304.527	0.181
1500.000	0.150	348.701	1499.986	2.615	-3.264	2.615	4.182	308.706	0.154
1600.000	0.212	355.759	1599.986	2.928	-3.303	2.928	4.414	311.557	0.066
1700.000	0.011	125.640	1699.986	3.107	-3.309	3.107	4.539	313.200	0.219
1800.000	0.384	118.140	1799.985	2.944	-3.006	2.944	4.207	314.403	0.373
1900.000	0.570	116.496	1899.981	2.564	-2.265	2.564	3.421	318.538	0.186
2000.000	0.527	138.345	1999.977	1.999	-1.515	1.999	2.508	322.839	0.212
2100.000	0.621	153.518	2099.972	1.170	-0.968	1.170	1.519	320.407	0.178
2200.000	1.180	148.446	2199.959	-0.192	-0.188	-0.192	0.268	224.330	0.564
2300.000	1.016	125.580	2299.941	-1.585	1.072	-1.585	1.913	145.929	0.464
2400.000	1.153	120.364	2399.923	-2.609	2.661	-2.609	3.726	134.438	0.169
2500.000	1.314	132.040	2499.900	-3.885	4.380	-3.885	5.855	131.573	0.298
2600.000	1.110	128.971	2599.878	-5.262	5.985	-5.262	7.969	131.324	0.214
2700.000	1.041	136.670	2699.860	-6.532	7.361	-6.532	9.841	131.585	0.160
2800.000	0.783	140.099	2799.848	-7.717	8.423	-7.717	11.424	132.497	0.264
2900.000	0.794	138.354	2899.838	-8.759	9.322	-8.759	12.791	133.218	0.027
3000.000	0.851	116.493	2999.828	-9.609	10.447	-9.609	14.194	132.606	0.317
3100.000	0.786	105.288	3099.818	-10.121	11.773	-10.121	15.525	130.684	0.172
3200.000	0.583	133.977	3199.811	-10.655	12.801	-10.655	16.655	129.772	0.392
3300.000	0.802	151.380	3299.804	-11.622	13.502	-11.622	17.815	130.721	0.301
3400.000	0.691	157.885	3399.795	-12.795	14.064	-12.795	19.014	132.295	0.139
3500.000	0.607	165.819	3499.789	-13.868	14.421	-13.868	20.007	133.879	0.123
3600.000	0.390	138.544	3599.785	-14.636	14.776	-14.636	20.798	134.727	0.316
3700.000	0.397	108.728	3699.783	-15.002	15.329	-15.002	21.449	134.382	0.203
3800.000	0.075	148.562	3799.782	-15.169	15.691	-15.169	21.825	134.030	0.343
3900.000	0.227	179.679	3899.782	-15.423	15.727	-15.423	22.027	134.442	0.167
4000.000	0.359	251.590	3999.781	-15.720	15.430	-15.720	22.028	135.533	0.360
4100.000	0.303	203.087	4099.779	-16.062	15.029	-16.062	21.997	136.903	0.277
4200.000	0.424	222.004	4199.777	-16.581	14.678	-16.581	22.144	138.484	0.169
4300.000	0.418	234.705	4299.774	-17.067	14.132	-17.067	22.158	140.374	0.093
4400.000	0.328	200.235	4399.772	-17.546	13.735	-17.546	22.283	141.946	0.237
4500.000	0.194	171.254	4499.771	-17.983	13.662	-17.983	22.584	142.775	0.184
4600.000	0.117	181.995	4599.771	-18.253	13.684	-18.253	22.813	143.141	0.082
4700.000	0.230	197.673	4699.771	-18.546	13.620	-18.546	23.010	143.708	0.121
4800.000	0.715	351.408	4799.768	-18.121	13.466	-18.121	22.576	143.384	0.926

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
4900.000	0.935	332.479	4899.758	-16.781	12.996	-16.781	21.225	142.245	0.347
5000.000	0.777	354.553	4999.747	-15.383	12.554	-15.383	19.856	140.781	0.362
5100.000	0.995	336.441	5099.736	-13.912	12.143	-13.912	18.466	138.884	0.352
5200.000	0.926	345.787	5199.722	-12.333	11.598	-12.333	16.929	136.760	0.171
5300.000	0.824	1.460	5299.710	-10.830	11.418	-10.830	15.737	133.487	0.259
5400.000	0.873	9.745	5399.699	-9.360	11.565	-9.360	14.878	128.985	0.132
5500.000	1.094	1.599	5499.684	-7.655	11.720	-7.655	13.999	123.149	0.261
5600.000	1.050	5.251	5599.667	-5.788	11.831	-5.788	13.171	116.070	0.081
5700.000	0.789	14.248	5699.654	-4.209	12.084	-4.209	12.796	109.203	0.298
5800.000	0.728	6.686	5799.645	-2.911	12.327	-2.911	12.666	103.285	0.117
5900.000	0.653	15.303	5899.638	-1.730	12.552	-1.730	12.671	97.847	0.128
6000.000	0.399	27.513	5999.634	-0.871	12.863	-0.871	12.893	93.875	0.276
6100.000	0.378	23.046	6099.631	-0.259	13.153	-0.259	13.156	91.127	0.037
6200.000	0.528	9.946	6199.628	0.499	13.362	0.499	13.371	87.863	0.181
6300.000	0.820	29.176	6299.621	1.577	13.791	1.577	13.881	83.474	0.366
6400.000	0.772	39.812	6399.612	2.720	14.571	2.720	14.823	79.426	0.155
6500.000	0.982	58.282	6499.600	3.688	15.731	3.688	16.158	76.806	0.350
6600.000	1.250	76.650	6599.581	4.390	17.521	4.390	18.063	75.933	0.444
6700.000	1.527	94.290	6699.552	4.543	19.912	4.543	20.423	77.149	0.507
6800.000	1.004	101.065	6799.528	4.275	22.101	4.275	22.510	79.053	0.543
6850.000	0.743	102.372	6849.522	4.121	22.847	4.121	23.216	79.775	0.524
<div> <div>HORIZONTAL DISPLACEMENT IS 23.216 FEET AT 79.775 DEGREES</div> </div>									