



Company/ Rig: Noble Energy/ VES
Well/API#: Gunther B18-1/05-123-15693
Declination: 8.26 Degrees
TD as Drilled: 7035 Feet
County/State: Weld/Colorado
VS-Azi: 0.000 Degrees
Latitude: 40.40464, Longitude: -104.58591
Grid North = True North -0.59 degs (NAD 27)
Grid Correction Applied = -0.59 degs



Depth Reference : RKB= GL/ Elevation= 4619 Feet

DRILLOG GYRO SURVEY CALCULATIONS

Filename: post-de_01.ut
Minimum Curvature Method
Report Date/Time: 1/18/2016 / 14:34

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

Denver, Co 80238
303-853-4976

Surveyor: Sean Bratt / Gunther B18-1

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	0.255	202.165	100.000	-0.206	-0.084	-0.206	0.223	202.165	0.255
200.000	0.307	160.065	199.999	-0.665	-0.077	-0.665	0.669	186.577	0.208
300.000	0.974	125.252	299.992	-1.408	0.709	-1.408	1.576	153.268	0.743
400.000	0.920	126.854	399.978	-2.380	2.045	-2.380	3.138	139.320	0.060
500.000	1.017	132.360	499.964	-3.459	3.344	-3.459	4.811	135.974	0.134
600.000	1.107	148.262	599.947	-4.879	4.508	-4.879	6.642	137.265	0.307
700.000	0.982	116.121	699.931	-6.078	5.785	-6.078	8.391	136.412	0.591
800.000	0.814	83.073	799.920	-6.369	7.260	-6.369	9.658	131.261	0.536
900.000	0.754	82.506	899.910	-6.198	8.618	-6.198	10.615	125.722	0.060
1000.000	0.724	152.205	999.904	-6.671	9.565	-6.671	11.661	124.891	0.845
1100.000	0.827	135.349	1099.895	-7.743	10.367	-7.743	12.939	126.755	0.249
1200.000	0.858	120.138	1199.884	-8.632	11.522	-8.632	14.397	126.841	0.225
1300.000	0.955	164.077	1299.873	-9.809	12.398	-9.809	15.809	128.351	0.684
1400.000	0.805	125.820	1399.862	-11.021	13.196	-11.021	17.193	129.869	0.594
1500.000	0.569	158.195	1499.855	-11.893	13.949	-11.893	18.331	130.450	0.445
1600.000	0.555	165.292	1599.850	-12.822	14.256	-12.822	19.174	131.968	0.071
1700.000	0.370	214.850	1699.847	-13.556	14.195	-13.556	19.628	133.680	0.423
1800.000	0.184	359.111	1799.846	-13.660	14.008	-13.660	19.566	134.280	0.530

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	0.416	32.679	1899.845	-13.194	14.201	-13.194	19.385	132.895	0.281
2000.000	0.534	8.328	1999.842	-12.428	14.465	-12.428	19.071	130.670	0.231
2100.000	0.870	356.122	2099.834	-11.209	14.481	-11.209	18.312	127.743	0.367
2200.000	0.891	8.189	2199.822	-9.682	14.540	-9.682	17.469	123.659	0.186
2300.000	1.021	343.001	2299.809	-8.060	14.390	-8.060	16.494	119.253	0.436
2400.000	1.038	343.910	2399.793	-6.338	13.879	-6.338	15.258	114.545	0.023
2500.000	1.319	349.832	2499.772	-4.335	13.425	-4.335	14.108	107.897	0.306
2600.000	1.064	10.213	2599.750	-2.288	13.386	-2.288	13.581	99.701	0.491
2700.000	1.117	338.243	2699.733	-0.469	13.190	-0.469	13.198	92.035	0.603
2800.000	1.227	343.289	2799.712	1.463	12.520	1.463	12.605	83.337	0.151
2900.000	1.210	338.430	2899.690	3.470	11.824	3.470	12.323	73.643	0.105
3000.000	1.438	326.168	2999.663	5.495	10.737	5.495	12.061	62.900	0.363
3100.000	1.429	316.622	3099.632	7.443	9.183	7.443	11.820	50.974	0.239
3200.000	1.311	326.894	3199.603	9.307	7.701	9.307	12.081	39.606	0.272
3300.000	0.884	14.067	3299.587	11.014	7.264	11.014	13.194	33.406	0.962
3400.000	0.655	38.040	3399.578	12.212	7.803	12.212	14.492	32.579	0.390
3500.000	0.696	67.416	3499.571	12.895	8.717	12.895	15.565	34.057	0.345
3600.000	0.490	91.919	3599.566	13.114	9.705	13.114	16.315	36.503	0.323
3700.000	0.454	31.165	3699.563	13.439	10.337	13.439	16.955	37.568	0.478
3800.000	0.703	60.843	3799.558	14.076	11.078	14.076	17.912	38.202	0.382
3900.000	0.486	63.369	3899.553	14.565	11.992	14.565	18.867	39.466	0.218
4000.000	0.511	90.221	3999.549	14.753	12.817	14.753	19.543	40.983	0.233
4100.000	0.367	83.942	4099.546	14.785	13.582	14.785	20.077	42.571	0.152
4200.000	0.269	74.153	4199.545	14.883	14.126	14.883	20.520	43.505	0.112
4300.000	0.206	74.104	4299.544	14.997	14.525	14.997	20.877	44.085	0.063
4400.000	0.271	50.044	4399.543	15.198	14.879	15.198	21.269	44.393	0.118
4500.000	0.598	93.459	4499.540	15.318	15.581	15.318	21.850	45.489	0.443
4600.000	1.215	62.756	4599.528	15.772	17.045	15.772	23.223	47.222	0.764
4700.000	1.447	93.368	4699.502	16.183	19.248	16.183	25.147	49.945	0.737
4800.000	1.610	126.104	4799.468	15.281	21.644	15.281	26.495	54.778	0.876
4900.000	1.608	101.733	4899.430	14.167	24.153	14.167	28.002	59.606	0.679
5000.000	1.654	111.697	4999.390	13.349	26.868	13.349	30.001	63.581	0.287
5100.000	1.536	117.790	5099.351	12.190	29.395	12.190	31.822	67.476	0.206
5200.000	1.502	93.915	5199.317	11.476	31.888	11.476	33.890	70.207	0.629
5300.000	1.710	104.824	5299.278	11.005	34.638	11.005	36.344	72.375	0.369
5400.000	2.297	101.110	5399.216	10.237	38.046	10.237	39.399	74.941	0.600
5500.000	2.163	105.819	5499.140	9.336	41.828	9.336	42.857	77.417	0.227
5600.000	2.469	111.753	5599.059	8.024	45.643	8.024	46.343	80.030	0.388
5700.000	2.552	130.712	5698.965	5.773	49.331	5.773	49.668	83.325	0.831
5800.000	1.854	144.554	5798.891	3.003	51.957	3.003	52.044	86.692	0.873

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	1.311	173.798	5898.854	0.548	53.019	0.548	53.022	89.408	0.956
6000.000	0.644	208.783	5998.839	-1.082	52.872	-1.082	52.883	91.173	0.866
6100.000	0.597	129.233	6098.835	-1.904	53.005	-1.904	53.039	92.058	0.795
6200.000	0.480	237.147	6198.833	-2.461	53.057	-2.461	53.114	92.656	0.874
6300.000	0.329	203.077	6298.830	-2.953	52.592	-2.953	52.675	93.213	0.277
6400.000	0.106	347.216	6398.830	-3.127	52.459	-3.127	52.552	93.411	0.420
6500.000	0.083	99.702	6498.830	-3.048	52.510	-3.048	52.598	93.322	0.158
6600.000	0.367	112.615	6598.829	-3.183	52.876	-3.183	52.972	93.445	0.287
6700.000	0.269	112.289	6698.827	-3.395	53.388	-3.395	53.496	93.639	0.098