



Company: Noble Energy
Rig: Production/VES
API # 05-123-30544

Date: 10-4-13
Surveyor: Justin Williams

VS: 0.000
Lat : 40.32925
Long: -104.78769

Well: Five Rivers USX K09-07
Location: Weld County, Colorado
North Reference: GRID
Convergence: GRID North is 0.46 De

Declination: 8.56
Depth Reference: RKB = Ground Level
Elevation: 4698

Total Depth as Drilled: 7835

Lat & Long obtained by handheld GPS at wellhead

HA Gyro Survey Calculations

Depth	Inc	AzG	N/-S	E/-W	TVD	DL	VS	CD
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100.000	0.397	157.695	-0.320	0.131	99.999	0.397	-0.320	0.346
200.000	0.582	176.660	-1.148	0.292	199.996	0.244	-1.148	1.185
300.000	0.419	191.387	-2.014	0.250	299.992	0.206	-2.014	2.030
400.000	0.428	155.316	-2.712	0.333	399.989	0.262	-2.712	2.733
500.000	0.775	163.512	-3.700	0.681	499.984	0.357	-3.700	3.762
600.000	0.846	171.370	-5.079	0.984	599.974	0.132	-5.079	5.173
700.000	0.708	170.492	-6.418	1.197	699.964	0.139	-6.418	6.529
800.000	0.704	167.576	-7.627	1.431	799.957	0.036	-7.627	7.760
900.000	0.983	176.626	-9.083	1.614	899.946	0.309	-9.083	9.226
1000.000	2.865	151.927	-12.145	2.840	999.886	2.013	-12.145	12.473
1100.000	4.566	153.727	-17.919	5.778	1099.673	1.705	-17.919	18.828
1200.000	6.747	152.192	-26.686	10.281	1199.180	2.187	-26.686	28.598
1300.000	8.312	147.011	-37.946	16.958	1298.315	1.704	-37.946	41.562
1400.000	9.050	136.271	-49.693	26.331	1397.176	1.778	-49.693	56.238
1500.000	9.949	127.171	-60.597	38.652	1495.809	1.747	-60.597	71.874
1600.000	10.515	117.068	-69.969	53.662	1594.226	1.879	-69.969	88.177
1700.000	11.178	104.509	-76.550	71.173	1692.453	2.449	-76.550	104.525
1800.000	11.788	108.184	-82.166	90.262	1790.452	0.953	-82.166	122.059
1900.000	12.121	103.097	-87.733	110.193	1888.286	1.105	-87.733	140.853
2000.000	13.785	104.778	-93.152	131.941	1985.738	1.706	-93.152	161.510
2100.000	15.796	102.003	-99.022	156.776	2082.421	2.132	-99.022	185.430
2200.000	17.356	99.672	-104.359	184.795	2178.263	1.696	-104.359	212.226
2300.000	19.718	98.395	-109.328	216.192	2273.069	2.396	-109.328	242.263
2400.000	21.067	100.843	-115.173	250.535	2366.802	1.596	-115.173	275.739
2500.000	24.437	104.329	-123.676	288.240	2459.011	3.628	-123.676	313.653
2600.000	28.952	106.133	-135.527	331.556	2548.331	4.587	-135.527	358.185
2700.000	30.375	105.001	-148.797	379.231	2635.224	1.529	-148.797	407.378
2800.000	31.636	102.335	-160.945	429.278	2720.937	1.864	-160.945	458.457
2900.000	28.734	99.473	-170.506	478.622	2807.373	3.239	-170.506	508.086
3000.000	30.470	100.933	-179.272	527.229	2894.319	1.880	-179.272	556.874
3100.000	32.365	101.091	-189.231	578.393	2979.655	1.897	-189.231	608.561
3200.000	32.827	99.561	-198.882	631.389	3063.905	0.945	-198.882	661.971
3300.000	30.458	99.286	-207.475	683.138	3149.032	2.374	-207.475	713.949
3400.000	30.264	96.763	-214.533	733.177	3235.322	1.289	-214.533	763.920
3500.000	27.908	95.927	-219.918	781.486	3322.705	2.391	-219.918	811.840

3600.000	26.830	95.665	-224.562	827.222	3411.510	1.084	-224.562	857.161
3700.000	25.993	98.384	-229.985	871.361	3501.074	1.471	-229.985	901.201
3800.000	25.163	100.587	-237.086	913.940	3591.275	1.263	-237.086	944.191
3900.000	26.335	104.759	-246.644	956.292	3681.352	2.158	-246.644	987.587
4000.000	29.343	103.498	-258.017	1001.577	3769.769	3.065	-258.017	1034.277
4100.000	30.782	102.411	-269.236	1050.397	3856.315	1.538	-269.236	1084.353
4200.000	30.488	97.633	-278.106	1100.538	3942.371	2.452	-278.106	1135.133
4300.000	28.740	96.656	-284.262	1149.565	4029.305	1.814	-284.262	1184.189
4400.000	27.302	98.902	-290.598	1196.105	4117.583	1.783	-290.598	1230.900
4500.000	29.062	99.700	-298.240	1242.708	4205.725	1.800	-298.240	1277.994
4600.000	29.138	98.686	-306.009	1290.715	4293.103	0.499	-306.009	1326.494
4700.000	27.843	99.904	-313.703	1337.788	4380.992	1.419	-313.703	1374.076
4800.000	25.981	100.366	-321.661	1382.342	4470.159	1.874	-321.661	1419.273
4900.000	24.413	106.572	-331.499	1423.705	4560.657	3.070	-331.499	1461.789
5000.000	24.739	104.507	-342.635	1463.770	4651.600	0.919	-342.635	1503.336
5100.000	25.227	103.545	-352.868	1504.745	4742.243	0.635	-352.868	1545.565
5200.000	25.312	106.547	-363.947	1545.956	4832.678	1.284	-363.947	1588.219
5300.000	23.820	107.021	-375.947	1585.759	4923.624	1.505	-375.947	1629.714
5400.000	21.509	104.337	-386.400	1622.835	5015.898	2.531	-386.400	1668.202
5500.000	20.731	102.434	-394.750	1657.882	5109.181	1.037	-394.750	1704.230
5600.000	21.096	103.220	-402.676	1692.685	5202.593	0.460	-402.676	1739.923
5700.000	19.322	102.785	-410.453	1726.340	5296.433	1.780	-410.453	1774.464
5800.000	16.520	102.846	-417.277	1756.341	5391.572	2.802	-417.277	1805.230
5900.000	13.963	101.423	-422.828	1782.033	5488.047	2.584	-422.828	1831.509
6000.000	12.047	97.863	-426.645	1804.198	5585.480	2.076	-426.645	1853.957
6100.000	11.305	93.272	-428.632	1824.322	5683.412	1.188	-428.632	1874.000
6200.000	10.505	95.128	-430.007	1843.187	5781.606	0.874	-430.007	1892.681
6300.000	9.367	93.051	-431.255	1860.393	5880.105	1.193	-431.255	1909.723
6400.000	6.919	89.148	-431.598	1874.544	5979.090	2.508	-431.598	1923.588
6500.000	5.052	87.059	-431.283	1884.965	6078.540	1.880	-431.283	1933.675
6600.000	3.635	82.103	-430.621	1892.503	6178.251	1.464	-430.621	1940.877
6700.000	2.644	70.149	-429.402	1897.813	6278.100	1.183	-429.402	1945.786
6800.000	1.872	50.723	-427.585	1901.248	6378.023	1.077	-427.585	1948.736
6900.000	1.373	36.045	-425.582	1903.217	6477.983	0.646	-425.582	1950.219
7000.000	1.126	72.441	-424.317	1904.859	6577.961	0.815	-424.317	1951.546
7100.000	0.549	86.172	-423.988	1906.274	6677.950	0.607	-423.988	1952.856
7200.000	0.356	100.374	-424.012	1907.058	6777.947	0.222	-424.012	1953.627
7300.000	0.574	118.081	-424.304	1907.806	6877.944	0.258	-424.304	1954.420
7400.000	0.555	112.873	-424.728	1908.694	6977.939	0.055	-424.728	1955.379
7500.000	0.366	86.087	-424.895	1909.459	7077.936	0.282	-424.895	1956.162

7D

0

degrees East of True North

Cbrg

0.000
157.695
165.709
172.930
172.991
169.566
169.033
169.435
169.372
169.926
166.837
162.128
158.930
155.920
152.082
147.468
142.514
137.084
132.312
128.526
125.223
122.277
119.455
116.826
114.689
113.223
112.233
111.423
110.552
109.608
108.779
108.116
107.484
106.894
106.310
105.717

105.188
104.785
104.543
104.462
104.446
104.376
104.182
103.889
103.656
103.495
103.338
103.197
103.099
103.107
103.174
103.198
103.247
103.337
103.393
103.393
103.381
103.374
103.365
103.348
103.305
103.222
103.132
103.051
102.966
102.888
102.819
102.749
102.675
102.605
102.558
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