



Company: Noble Energy
Rig: Production / V.E.S.

API # 05-123-34558

Date: 9/26/2013

Surveyor: Norman Cowan

VS: 0.000

Lat : 40.265

Long: -104.597

Well: Ocoma C 31-20D

Location: Weld County, Colorado

North Reference: GRID

Convergence: Grid North is 0.58 Deg East of True

Declination: 8.46 Degrees

Depth Reference: Ground Level

Elevation: 4865 Feet

Total Depth as Drilled: 7586 Feet

Lat & Long obtained by handheld GPS at wellhead

HA Gyro Survey Calculations

Depth	Inc	AzG	N/-S	E/-W	TVD	DL	VS	CD	Cbrg
0.000	0.000	0.000	0.000	0.000	0.000	****	0.000	0.000	0.000
100.000	0.748	55.975	0.365	0.541	99.997	0.748	0.365	0.653	55.975
200.000	0.400	55.683	0.927	1.370	199.992	0.348	0.927	1.654	55.913
300.000	0.555	122.479	0.863	2.067	299.989	0.542	0.863	2.240	67.326
400.000	0.353	131.516	0.399	2.706	399.986	0.214	0.399	2.736	81.614
500.000	0.521	116.289	-0.007	3.345	499.983	0.203	-0.007	3.345	90.114
600.000	0.586	108.740	-0.372	4.237	599.978	0.098	-0.372	4.253	95.023
700.000	0.670	95.289	-0.591	5.304	699.972	0.169	-0.591	5.337	96.355
800.000	1.734	10.432	0.844	6.161	799.954	1.803	0.844	6.218	82.200
900.000	4.790	0.259	6.509	6.453	899.781	3.098	6.509	9.166	44.755
1000.000	6.609	358.133	16.437	6.285	999.283	1.831	16.437	17.597	20.925
1100.000	8.786	357.100	29.818	5.711	1098.376	2.181	29.818	30.360	10.842
1200.000	10.958	357.823	46.945	4.963	1196.889	2.176	46.945	47.207	6.035
1300.000	12.512	356.938	67.261	4.024	1294.796	1.564	67.261	67.381	3.423
1400.000	14.460	358.269	90.559	3.068	1392.034	1.973	90.559	90.611	1.940
1500.000	16.016	359.157	116.835	2.488	1488.516	1.573	116.835	116.861	1.220
1600.000	16.026	1.075	144.429	2.544	1584.632	0.529	144.429	144.452	1.009
1700.000	18.113	358.931	173.775	2.513	1680.223	2.180	173.775	173.794	0.828
1800.000	19.164	357.639	205.718	1.547	1774.978	1.129	205.718	205.724	0.431
1900.000	20.366	358.594	239.514	0.443	1869.085	1.245	239.514	239.514	0.106
2000.000	21.017	358.270	274.834	-0.525	1962.634	0.661	274.834	274.835	359.891
2100.000	19.882	356.937	309.740	-1.975	2056.331	1.227	309.740	309.746	359.635
2200.000	19.664	357.606	343.530	-3.586	2150.435	0.314	343.530	343.549	359.402
2300.000	19.816	358.870	377.288	-4.623	2244.559	0.453	377.288	377.316	359.298
2400.000	21.030	359.648	412.178	-5.068	2338.272	1.244	412.178	412.209	359.296
2500.000	20.634	359.060	447.738	-5.467	2431.735	0.447	447.738	447.772	359.300
2600.000	20.591	358.660	482.936	-6.168	2525.333	0.147	482.936	482.976	359.268
2700.000	20.943	359.263	518.387	-6.809	2618.836	0.411	518.387	518.431	359.247
2800.000	21.761	358.574	554.789	-7.501	2711.971	0.856	554.789	554.839	359.225
2900.000	21.487	359.902	591.634	-7.994	2804.934	0.561	591.634	591.688	359.226
3000.000	23.453	358.701	629.847	-8.476	2897.338	2.019	629.847	629.904	359.229
3100.000	23.481	357.757	669.649	-9.707	2989.067	0.377	669.649	669.719	359.170
3200.000	23.537	353.680	709.405	-12.685	3080.773	1.627	709.405	709.518	358.976
3300.000	22.137	348.490	747.719	-18.644	3172.941	2.452	747.719	747.951	358.572
3400.000	21.743	348.499	784.331	-26.097	3265.699	0.395	784.331	784.765	358.094
3500.000	21.011	347.467	819.982	-33.680	3358.819	0.823	819.982	820.674	357.648

3600.000	21.045	350.269	855.180	-40.605	3452.162	1.006	855.180	856.143	357.282
3700.000	21.275	352.528	890.865	-45.999	3545.421	0.847	890.865	892.052	357.044
3800.000	21.002	352.664	926.626	-50.646	3638.692	0.277	926.626	928.009	356.872
3900.000	21.954	353.892	962.988	-54.924	3731.748	1.053	962.988	964.553	356.736
4000.000	22.811	356.103	1000.916	-58.231	3824.215	1.201	1000.916	1002.608	356.670
4100.000	22.999	356.190	1039.748	-60.846	3916.330	0.191	1039.748	1041.527	356.651
4200.000	21.942	356.531	1077.890	-63.275	4008.736	1.065	1077.890	1079.746	356.640
4300.000	20.392	353.604	1113.856	-66.347	4101.989	1.875	1113.856	1115.830	356.591
4400.000	22.559	352.131	1150.176	-70.914	4195.042	2.233	1150.176	1152.360	356.472
4500.000	24.844	352.462	1190.009	-76.297	4286.601	2.289	1190.009	1192.452	356.332
4600.000	23.422	355.686	1230.658	-80.548	4377.862	1.938	1230.658	1233.291	356.255
4700.000	21.435	354.597	1268.672	-83.764	4470.293	2.030	1268.672	1271.435	356.223
4800.000	19.987	355.248	1303.897	-86.901	4563.828	1.467	1303.897	1306.790	356.187
4900.000	17.368	353.451	1335.762	-90.019	4658.555	2.681	1335.762	1338.792	356.145
5000.000	14.049	354.882	1362.688	-92.805	4754.806	3.341	1362.688	1365.844	356.104
5100.000	11.430	356.009	1384.666	-94.578	4852.336	2.631	1384.666	1387.892	356.093
5200.000	8.420	353.547	1401.830	-96.091	4950.829	3.039	1401.830	1405.119	356.079
5300.000	6.474	354.135	1414.714	-97.490	5049.980	1.948	1414.714	1418.070	356.058
5400.000	4.487	1.134	1424.235	-97.989	5149.519	2.093	1424.235	1427.601	356.064
5500.000	3.528	324.413	1430.649	-99.702	5249.290	2.682	1430.649	1434.119	356.013
5600.000	1.932	306.038	1434.143	-102.856	5349.175	1.800	1434.143	1437.826	355.898
5700.000	1.871	223.256	1433.946	-105.338	5449.136	2.515	1433.946	1437.810	355.799
5800.000	0.124	244.873	1432.711	-106.555	5549.117	1.756	1432.711	1436.668	355.747
5900.000	0.182	270.053	1432.665	-106.812	5649.116	0.087	1432.665	1436.641	355.736
6000.000	0.512	260.257	1432.589	-107.411	5749.114	0.335	1432.589	1436.610	355.712
6100.000	0.326	281.570	1432.571	-108.130	5849.112	0.240	1432.571	1436.646	355.684
6200.000	0.453	252.654	1432.510	-108.786	5949.109	0.230	1432.510	1436.635	355.657
6300.000	0.426	261.408	1432.337	-109.530	6049.107	0.072	1432.337	1436.519	355.627
6400.000	0.589	247.729	1432.087	-110.374	6149.103	0.202	1432.087	1436.334	355.593
6500.000	0.320	248.036	1431.787	-111.109	6249.099	0.269	1431.787	1436.092	355.563
6600.000	0.578	257.310	1431.572	-111.860	6349.096	0.267	1431.572	1435.935	355.532
6700.000	0.792	255.907	1431.293	-113.022	6449.089	0.215	1431.293	1435.748	355.485
6800.000	1.068	259.275	1430.951	-114.608	6549.076	0.281	1430.951	1435.533	355.421
6900.000	1.239	263.387	1430.653	-116.598	6649.055	0.190	1430.653	1435.397	355.341
7000.000	1.528	259.452	1430.285	-118.983	6749.026	0.304	1430.285	1435.225	355.245
7100.000	1.427	251.426	1429.644	-121.473	6848.993	0.230	1429.644	1434.795	355.143
7200.000	1.596	248.345	1428.734	-123.947	6948.958	0.188	1428.734	1434.100	355.042
7300.000	1.862	255.250	1427.806	-126.813	7048.913	0.338	1427.806	1433.426	354.924

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