



Company: Noble Energy
 Rig: Production/VES
 API # 05-123-32610
 Date: 4/12/2013
 Surveyor: Nick Kula
 VS: 0.000
 Lat : 40.5529
 Long: -104.552

Well: Mojack USX AB21-15
 Location: Weld County, Colorado
 North Reference: GRID
 Convergence: Grid North is 0.61 Degrees East of
 Declination: 8.52
 Depth Reference: Ground Level
 Elevation: 4901'
 Total Depth as Drilled: 7345'

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	0.000
100.000	0.110	202.597	-0.088	-0.037	100.000	0.110	-0.088	0.096	202.597
200.000	0.557	88.931	-0.168	0.412	199.998	0.609	-0.168	0.445	112.124
300.000	0.294	191.402	-0.410	0.847	299.997	0.683	-0.410	0.941	115.826
400.000	0.393	158.680	-0.981	0.921	399.995	0.216	-0.981	1.346	136.807
500.000	0.490	196.736	-1.711	0.923	499.992	0.302	-1.711	1.944	151.648
600.000	0.878	191.802	-2.870	0.643	599.985	0.393	-2.870	2.942	167.371
700.000	0.922	227.105	-4.168	-0.103	699.973	0.547	-4.168	4.169	181.413
800.000	1.183	242.582	-5.191	-1.608	799.956	0.384	-5.191	5.434	197.216
900.000	1.683	242.878	-6.336	-3.832	899.925	0.500	-6.336	7.404	211.165
1000.000	1.753	253.098	-7.450	-6.602	999.880	0.314	-7.450	9.954	221.548
1100.000	1.651	242.131	-8.568	-9.339	1099.836	0.341	-8.568	12.674	227.466
1200.000	1.403	251.627	-9.627	-11.774	1199.801	0.353	-9.627	15.209	230.729
1300.000	1.529	241.234	-10.655	-14.106	1299.768	0.294	-10.655	17.678	232.934
1400.000	1.529	244.892	-11.863	-16.483	1399.733	0.098	-11.863	20.308	234.257
1500.000	1.977	241.440	-13.254	-19.206	1499.686	0.460	-13.254	23.335	235.391
1600.000	1.522	235.510	-14.830	-21.815	1599.639	0.489	-14.830	26.379	235.792
1700.000	1.760	231.336	-16.542	-24.109	1699.598	0.266	-16.542	29.238	235.545
1800.000	1.265	254.904	-17.788	-26.374	1799.564	0.785	-17.788	31.812	236.001
1900.000	1.356	247.960	-18.520	-28.536	1899.538	0.183	-18.520	34.019	237.017
2000.000	0.521	232.772	-19.239	-29.995	1999.523	0.865	-19.239	35.635	237.324
2100.000	0.644	230.771	-19.869	-30.792	2099.518	0.125	-19.869	36.647	237.167
2200.000	1.215	228.825	-20.923	-32.026	2199.505	0.572	-20.923	38.255	236.843
2300.000	1.172	200.574	-22.578	-33.183	2299.484	0.584	-22.578	40.136	235.768
2400.000	1.004	206.071	-24.323	-33.928	2399.466	0.198	-24.323	41.746	234.363
2500.000	0.710	245.570	-25.366	-34.877	2499.455	0.642	-25.366	43.126	233.971
2600.000	0.723	219.111	-26.112	-35.839	2599.448	0.328	-26.112	44.342	233.923
2700.000	0.669	230.167	-26.975	-36.685	2699.440	0.144	-26.975	45.535	233.672
2800.000	0.791	236.606	-27.729	-37.710	2799.432	0.147	-27.729	46.807	233.672
2900.000	0.640	235.030	-28.429	-38.744	2899.424	0.153	-28.429	48.056	233.730
3000.000	0.366	267.137	-28.766	-39.521	2999.421	0.383	-28.766	48.881	233.951
3100.000	0.684	240.249	-29.078	-40.358	3099.416	0.393	-29.078	49.742	234.228
3200.000	0.467	256.195	-29.471	-41.272	3199.411	0.267	-29.471	50.714	234.471
3300.000	0.561	255.394	-29.692	-42.142	3299.407	0.094	-29.692	51.551	234.833
3400.000	0.800	230.747	-30.257	-43.156	3399.400	0.373	-30.257	52.706	234.966

3500.000	1.296	268.769	-30.723	-44.827	3499.385	0.828	-30.723	54.345	235.575
3600.000	1.609	232.090	-31.609	-47.065	3599.354	0.961	-31.609	56.695	236.114
3700.000	1.438	234.817	-33.195	-49.198	3699.319	0.186	-33.195	59.350	235.992
3800.000	0.535	254.967	-34.039	-50.675	3799.303	0.953	-34.039	61.046	236.110
3900.000	0.254	347.310	-33.944	-51.174	3899.302	0.601	-33.944	61.409	236.443
4000.000	0.771	295.448	-33.439	-51.830	3999.298	0.646	-33.439	61.681	237.171
4100.000	0.750	315.847	-32.681	-52.894	4099.289	0.270	-32.681	62.175	238.290
4200.000	0.816	299.181	-31.864	-53.971	4199.280	0.236	-31.864	62.675	239.443
4300.000	1.536	286.326	-31.140	-55.879	4299.258	0.763	-31.140	63.970	240.870
4400.000	2.077	283.732	-30.333	-58.926	4399.208	0.547	-30.333	66.275	242.762
4500.000	1.604	302.634	-29.148	-61.866	4499.157	0.763	-29.148	68.388	244.773
4600.000	2.050	280.993	-28.052	-64.801	4599.107	0.814	-28.052	70.612	246.593
4700.000	2.501	274.760	-27.530	-68.731	4699.028	0.514	-27.530	74.039	248.172
4800.000	2.506	270.279	-27.338	-73.092	4798.933	0.196	-27.338	78.037	249.493
4900.000	3.334	280.431	-26.801	-78.137	4898.803	0.973	-26.801	82.605	251.068
5000.000	3.215	274.353	-26.062	-83.792	4998.640	0.367	-26.062	87.752	252.723
5100.000	3.339	263.530	-26.177	-89.482	5098.478	0.630	-26.177	93.232	253.694
5200.000	2.736	271.560	-26.440	-94.761	5198.337	0.736	-26.440	98.380	254.410
5300.000	1.961	269.777	-26.382	-98.857	5298.252	0.779	-26.382	102.317	255.058
5400.000	2.064	264.439	-26.563	-102.360	5398.191	0.214	-26.563	105.750	255.452
5500.000	1.266	249.623	-27.122	-105.188	5498.148	0.900	-27.122	108.628	255.542
5600.000	0.892	215.023	-28.144	-106.670	5598.131	0.734	-28.144	110.320	255.220
5700.000	0.564	177.235	-29.273	-107.093	5698.124	0.564	-29.273	111.022	254.712
5800.000	0.542	68.210	-29.590	-106.630	5798.121	0.901	-29.590	110.660	254.491
5900.000	0.877	120.176	-29.799	-105.529	5898.114	0.691	-29.799	109.656	254.232
6000.000	0.513	207.026	-30.583	-105.071	5998.109	0.991	-30.583	109.431	253.772
6100.000	0.587	212.094	-31.415	-105.547	6098.104	0.089	-31.415	110.123	253.425
6200.000	0.698	169.343	-32.448	-105.706	6198.098	0.480	-32.448	110.574	252.935
6300.000	0.775	179.954	-33.723	-105.593	6298.090	0.156	-33.723	110.847	252.288
6400.000	0.397	190.610	-34.740	-105.656	6398.085	0.392	-34.740	111.221	251.799
6500.000	0.713	194.960	-35.681	-105.881	6498.080	0.319	-35.681	111.731	251.376
6600.000	0.554	203.724	-36.725	-106.236	6598.074	0.186	-36.725	112.404	250.930
6700.000	0.878	203.695	-37.869	-106.738	6698.066	0.324	-37.869	113.257	250.466
6800.000	1.136	186.104	-39.557	-107.152	6798.051	0.400	-39.557	114.220	249.738
6900.000	0.945	181.341	-41.367	-107.276	6898.034	0.210	-41.367	114.976	248.913
7000.000	1.492	201.702	-43.401	-107.777	6998.012	0.690	-43.401	116.187	248.066
7100.000	2.334	197.672	-46.551	-108.877	7097.955	0.852	-46.551	118.411	246.851
7150.000	2.472	192.339	-48.575	-109.416	7147.911	0.526	-48.575	119.714	246.062

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