



Company: Noble Energy
Rig: Production/ V.E.S
API # 05-123-22410
Date: 9/26/2013
Surveyor: Jay Hinman
VS: 0.000
Lat : 40.14742
Long: -104.55411

Well: Perkins 34-9
Location: Weld County, Colorado
North Reference: GRID
Convergence: Grid North is 0.61 Deg
Declination: 8.43
Depth Reference: Ground Level
Elevation: 4938'
Total Depth as Drilled: 7883'

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
100.000	0.597	155.860	-0.475	0.213	99.998	0.597	-0.475	0.521
200.000	0.595	221.286	-1.341	0.084	199.994	0.644	-1.341	1.344
300.000	0.634	237.835	-2.026	-0.727	299.988	0.181	-2.026	2.152
400.000	0.773	247.421	-2.579	-1.819	399.981	0.182	-2.579	3.156
500.000	0.741	257.929	-2.974	-3.075	499.972	0.142	-2.974	4.278
600.000	0.317	316.797	-2.908	-3.896	599.968	0.638	-2.908	4.862
700.000	1.028	27.602	-1.912	-3.670	699.962	0.971	-1.912	4.138
800.000	1.981	38.171	0.242	-2.186	799.926	0.989	0.242	2.200
900.000	2.865	47.922	3.275	0.736	899.836	0.972	3.275	3.357
1000.000	3.017	47.614	6.724	4.535	999.704	0.154	6.724	8.110
1100.000	3.120	55.369	10.044	8.718	1099.562	0.427	10.044	13.300
1200.000	3.041	45.166	13.461	12.838	1199.418	0.553	13.461	18.602
1300.000	3.027	48.378	17.085	16.693	1299.278	0.171	17.085	23.887
1400.000	2.945	51.448	20.440	20.676	1399.142	0.180	20.440	29.074
1500.000	2.782	59.111	23.288	24.768	1499.017	0.416	23.288	33.997
1600.000	2.624	45.968	26.125	28.497	1598.907	0.638	26.125	38.660
1700.000	2.706	49.683	29.243	31.942	1698.799	0.191	29.243	43.306
1800.000	2.037	47.026	31.981	35.042	1798.713	0.677	31.981	47.442
1900.000	1.934	47.228	34.339	37.581	1898.653	0.104	34.339	50.906
2000.000	1.631	50.495	36.390	39.918	1998.604	0.319	36.390	54.015
2100.000	1.368	34.826	38.275	41.698	2098.570	0.485	38.275	56.601
2200.000	0.811	37.764	39.815	42.813	2198.552	0.559	39.815	58.465
2300.000	0.615	45.308	40.752	43.628	2298.544	0.217	40.752	59.700
2400.000	0.557	54.958	41.408	44.407	2398.539	0.114	41.408	60.718
2500.000	0.319	34.733	41.916	44.964	2498.536	0.280	41.916	61.471
2600.000	0.704	37.652	42.631	45.497	2598.532	0.385	42.631	62.349
2700.000	0.678	23.759	43.658	46.110	2698.525	0.169	43.658	63.500
2800.000	0.384	101.095	44.135	46.678	2798.521	0.702	44.135	64.239
2900.000	0.106	47.356	44.133	47.075	2898.520	0.332	44.133	64.528
3000.000	0.345	55.361	44.367	47.391	2998.519	0.240	44.367	64.918
3100.000	0.555	103.050	44.429	48.110	3098.517	0.411	44.429	65.487
3200.000	0.481	117.936	44.123	48.953	3198.513	0.153	44.123	65.903
3300.000	0.903	126.261	43.460	49.959	3298.505	0.432	43.460	66.217
3400.000	1.430	131.731	42.164	51.526	3398.484	0.538	42.164	66.578

3500.000	2.043	125.019	40.310	53.917	3498.438	0.645	40.310	67.319
3600.000	1.655	127.484	38.408	56.522	3598.386	0.397	38.408	68.337
3700.000	1.057	139.433	36.829	58.268	3698.357	0.658	36.829	68.931
3800.000	0.878	123.851	35.702	59.504	3798.343	0.316	35.702	69.393
3900.000	0.435	111.296	35.138	60.493	3898.336	0.464	35.138	69.958
4000.000	0.329	89.030	35.005	61.134	3998.334	0.180	35.005	70.446
4100.000	0.478	65.183	35.185	61.800	4098.332	0.221	35.185	71.114
4200.000	0.454	66.569	35.517	62.542	4198.328	0.026	35.517	71.923
4300.000	0.083	176.586	35.603	62.910	4298.327	0.489	35.603	72.286
4400.000	0.176	323.584	35.654	62.823	4398.327	0.249	35.654	72.236
4500.000	0.466	232.543	35.531	62.410	4498.326	0.501	35.531	71.815
4600.000	0.546	251.738	35.134	61.635	4598.322	0.186	35.134	70.946
4700.000	0.455	235.353	34.759	60.856	4698.318	0.168	34.759	70.083
4800.000	0.951	251.422	34.269	59.742	4798.311	0.529	34.269	68.873
4900.000	0.809	269.667	34.000	58.249	4898.299	0.312	34.000	67.446
5000.000	0.364	17.138	34.300	57.637	4998.296	0.982	34.300	67.071
5100.000	1.034	60.260	35.052	58.514	5098.288	0.807	35.052	68.209
5200.000	0.874	19.938	36.217	59.557	5198.275	0.675	36.217	69.705
5300.000	0.742	55.438	37.301	60.351	5298.266	0.509	37.301	70.948
5400.000	0.198	346.526	37.837	60.844	5398.263	0.696	37.837	71.649
5500.000	0.139	210.372	37.900	60.742	5498.262	0.314	37.900	71.596
5600.000	0.495	161.066	37.387	60.821	5598.261	0.417	37.387	71.393
5700.000	0.887	165.529	36.229	61.154	5698.253	0.395	36.229	71.080
5800.000	1.045	168.529	34.586	61.529	5798.239	0.166	34.586	70.584
5900.000	1.228	169.364	32.640	61.908	5898.219	0.184	32.640	69.985
6000.000	1.117	161.888	30.660	62.409	5998.199	0.189	30.660	69.533
6100.000	1.146	147.915	28.886	63.243	6098.179	0.277	28.886	69.528
6200.000	1.381	161.458	26.896	64.158	6198.155	0.378	26.896	69.567
6300.000	1.564	156.055	24.507	65.095	6298.122	0.230	24.507	69.555
6400.000	1.521	144.086	22.184	66.427	6398.086	0.324	22.184	70.034
6500.000	1.653	143.709	19.946	68.060	6498.048	0.132	19.946	70.922
6600.000	2.070	141.730	17.366	70.032	6597.995	0.421	17.366	72.153
6700.000	2.374	133.485	14.523	72.653	6697.920	0.441	14.523	74.090
6800.000	2.602	127.527	11.715	75.956	6797.825	0.344	11.715	76.854
6900.000	3.125	127.193	8.685	79.927	6897.700	0.523	8.685	80.398
7000.000	2.839	120.886	5.766	84.224	6997.565	0.435	5.766	84.421

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rees East of True North

Cbrg

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155.860
176.434
199.755
215.193
225.955
233.267
242.487
276.311
12.670
33.998
40.956
43.643
44.335
45.329
46.765
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83.799
86.084