



Company: Noble Energy
Well: Pettinger USX AB 35-8
API#: 05-123-24535
Rig Name: Production / Lightning
Location: Weld County, Colorado
Latitude: 40.532, Longitude: -104.510
GRID North is 0.640 Degrees East of True North
VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB = Ground Level

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: pettinger35-8_ed.ut
Minimum Curvature Method
Report Date/Time: 2/8/2012 / 14:24

Vaughn Energy Services
Henderson, CO
303-853-4976
Robert Davis

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	0.238	294.822	100.000	0.087	-0.189	0.087	0.208	294.822	0.238
200.000	0.209	299.943	199.999	0.265	-0.535	0.265	0.597	296.382	0.036
300.000	0.265	288.231	299.998	0.429	-0.912	0.429	1.008	295.161	0.074
400.000	0.420	6.872	399.997	0.865	-1.088	0.865	1.390	308.476	0.450
500.000	0.565	35.931	499.993	1.628	-0.755	1.628	1.795	335.119	0.284
600.000	0.528	23.369	599.989	2.450	-0.283	2.450	2.466	353.407	0.125
700.000	0.401	22.413	699.985	3.196	0.033	3.196	3.196	0.588	0.127
800.000	0.221	39.066	799.984	3.669	0.288	3.669	3.680	4.482	0.199
900.000	0.251	214.999	899.984	3.639	0.283	3.639	3.650	4.454	0.471
1000.000	0.453	205.543	999.982	3.103	-0.013	3.103	3.103	359.766	0.210
1100.000	0.377	220.038	1099.979	2.494	-0.395	2.494	2.525	350.997	0.129
1200.000	0.348	219.789	1199.977	2.008	-0.802	2.008	2.162	338.236	0.029
1300.000	0.397	209.761	1299.975	1.474	-1.168	1.474	1.880	321.595	0.081
1400.000	0.230	227.904	1399.973	1.038	-1.489	1.038	1.815	304.885	0.192
1500.000	0.358	235.608	1499.972	0.727	-1.896	0.727	2.031	290.975	0.134
1600.000	0.342	223.717	1599.970	0.335	-2.360	0.335	2.384	278.074	0.074
1700.000	0.408	226.471	1699.968	-0.126	-2.824	-0.126	2.827	267.450	0.069
1800.000	0.406	200.720	1799.966	-0.703	-3.208	-0.703	3.284	257.646	0.181
1900.000	0.716	185.441	1899.961	-1.657	-3.393	-1.657	3.776	243.973	0.342
2000.000	0.613	168.670	1999.954	-2.803	-3.347	-2.803	4.366	230.051	0.219
2100.000	0.774	142.460	2099.947	-3.863	-2.830	-3.863	4.789	216.226	0.352
2200.000	0.904	146.263	2199.936	-5.055	-1.980	-5.055	5.429	201.394	0.141
2300.000	0.874	147.213	2299.924	-6.352	-1.129	-6.352	6.452	190.081	0.033
2400.000	0.789	160.140	2399.914	-7.641	-0.482	-7.641	7.657	183.611	0.205
2500.000	0.725	165.525	2499.905	-8.902	-0.090	-8.902	8.902	180.580	0.096
2600.000	0.693	166.488	2599.897	-10.103	0.209	-10.103	10.105	178.813	0.034
2700.000	0.664	165.129	2699.890	-11.251	0.499	-11.251	11.262	177.458	0.034
2800.000	0.660	167.328	2799.884	-12.373	0.774	-12.373	12.397	176.418	0.026
2900.000	0.452	162.243	2899.879	-13.310	1.021	-13.310	13.349	175.614	0.213
3000.000	0.362	154.191	2999.876	-13.970	1.279	-13.970	14.028	174.770	0.106
3100.000	0.463	149.546	3099.874	-14.602	1.621	-14.602	14.692	173.666	0.106
3200.000	0.392	123.839	3199.871	-15.141	2.110	-15.141	15.287	172.066	0.202
3300.000	0.484	105.631	3299.868	-15.445	2.801	-15.445	15.697	169.720	0.166
3400.000	0.435	139.961	3399.865	-15.850	3.452	-15.850	16.221	167.712	0.275

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
3500.000	0.790	195.170	3499.860	-16.806	3.516	-16.806	17.170	168.184	0.649
3600.000	1.525	174.946	3599.839	-18.798	3.453	-18.798	19.112	169.592	0.830
3700.000	1.565	178.542	3699.803	-21.488	3.605	-21.488	21.788	170.477	0.105
3800.000	1.670	171.340	3799.763	-24.294	3.859	-24.294	24.599	170.975	0.229
3900.000	1.976	170.497	3899.713	-27.436	4.363	-27.436	27.780	170.964	0.307
4000.000	1.896	154.658	3999.656	-30.632	5.356	-30.632	31.096	170.082	0.539
4100.000	1.894	158.477	4099.601	-33.664	6.670	-33.664	34.318	168.793	0.126
4200.000	1.861	174.313	4199.548	-36.817	7.437	-36.817	37.560	168.580	0.518
4300.000	1.526	169.931	4299.505	-39.743	7.831	-39.743	40.507	168.853	0.359
4400.000	1.534	182.341	4399.469	-42.392	8.009	-42.392	43.142	169.301	0.331
4500.000	1.605	192.032	4499.432	-45.099	7.662	-45.099	45.745	170.357	0.274
4600.000	1.532	191.359	4599.395	-47.779	7.107	-47.779	48.305	171.539	0.075
4700.000	1.524	196.005	4699.359	-50.368	6.477	-50.368	50.783	172.672	0.124
4800.000	1.424	200.874	4799.326	-52.808	5.668	-52.808	53.112	173.874	0.160
4900.000	1.685	220.562	4899.290	-55.086	4.269	-55.086	55.251	175.569	0.590
5000.000	1.834	215.412	4999.243	-57.507	2.386	-57.507	57.557	177.624	0.217
5100.000	1.767	219.256	5099.193	-60.005	0.483	-60.005	60.007	179.539	0.138
5200.000	1.453	215.691	5199.154	-62.229	-1.232	-62.229	62.241	181.135	0.330
5300.000	1.217	206.823	5299.127	-64.206	-2.451	-64.206	64.253	182.186	0.313
5400.000	0.844	197.231	5399.110	-65.857	-3.148	-65.857	65.932	182.737	0.409
5500.000	0.770	158.824	5499.101	-67.187	-3.124	-67.187	67.259	182.662	0.535
5600.000	0.569	133.708	5599.094	-68.156	-2.522	-68.156	68.203	182.120	0.351
5700.000	0.573	106.561	5699.090	-68.641	-1.685	-68.641	68.662	181.406	0.268
5800.000	0.247	93.930	5799.087	-68.799	-0.991	-68.799	68.806	180.825	0.336
5900.000	0.208	109.311	5899.086	-68.873	-0.605	-68.873	68.876	180.503	0.072
6000.000	0.417	94.009	5999.085	-68.959	-0.071	-68.959	68.959	180.059	0.223
6100.000	0.393	93.776	6099.082	-69.007	0.634	-69.007	69.010	179.474	0.024
6200.000	0.430	49.502	6199.080	-68.785	1.261	-68.785	68.797	178.949	0.312
6300.000	0.406	110.641	6299.078	-68.666	1.878	-68.666	68.692	178.433	0.426
6400.000	0.247	95.614	6399.076	-68.812	2.425	-68.812	68.855	177.982	0.179
6500.000	0.378	88.014	6499.075	-68.822	2.969	-68.822	68.886	177.530	0.137
6600.000	0.440	95.484	6599.072	-68.847	3.681	-68.847	68.946	176.939	0.082
6700.000	0.483	111.177	6699.069	-69.036	4.457	-69.036	69.180	176.306	0.133
6800.000	0.473	135.858	6799.065	-69.484	5.137	-69.484	69.674	175.772	0.204
6900.000	0.603	129.613	6899.061	-70.116	5.829	-70.116	70.358	175.247	0.143
7000.000	0.674	133.829	6999.055	-70.859	6.659	-70.859	71.171	174.631	0.085
HORIZONTAL DISPLACEMENT IS 71.171 FEET AT 174.631 DEGREES									