



Company: Noble Energy
Well: Hagermeister USX AA 7-6
API #:
Rig Name: Production
State/County: Colorado/Weld
Latitude: 40.503, Longitude: -104.484
GRID North is 0.660 Degrees East of True North
VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : Ground Level

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: hgrmestruxaa-01_ed.ut

Minimum Curvature Method

Report Date/Time: 11/16/2011 / 18:49

Vaughn Energy Services

Henderson, Colorado

866-835-8333

Randy Holcomb

RKB=Ground Level

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	0.255	101.449	100.000	-0.044	0.218	-0.044	0.223	101.449	0.255
200.000	0.440	63.099	199.998	0.085	0.779	0.085	0.784	83.757	0.287
300.000	0.563	74.730	299.994	0.388	1.596	0.388	1.643	76.321	0.159
400.000	0.457	83.674	399.990	0.562	2.467	0.562	2.530	77.169	0.132
500.000	0.894	68.226	499.983	0.895	3.588	0.895	3.698	75.991	0.469
600.000	1.055	77.219	599.969	1.388	5.210	1.388	5.392	75.080	0.221
700.000	1.038	75.921	699.952	1.812	6.987	1.812	7.218	75.458	0.029
800.000	1.044	77.284	799.935	2.233	8.754	2.233	9.035	75.689	0.025
900.000	0.997	71.227	899.920	2.714	10.467	2.714	10.813	75.464	0.117
1000.000	0.849	68.638	999.907	3.264	11.981	3.264	12.418	74.761	0.154
1100.000	0.993	68.486	1099.894	3.851	13.477	3.851	14.017	74.051	0.144
1200.000	0.939	73.335	1199.879	4.404	15.068	4.404	15.699	73.707	0.098
1300.000	1.082	75.037	1299.864	4.883	16.765	4.883	17.461	73.761	0.146
1400.000	1.106	84.960	1399.846	5.211	18.638	5.211	19.353	74.379	0.191
1500.000	1.068	80.734	1499.828	5.446	20.519	5.446	21.230	75.135	0.089
1600.000	1.131	84.757	1599.809	5.686	22.422	5.686	23.132	75.769	0.099
1700.000	0.965	77.673	1699.793	5.956	24.227	5.956	24.948	76.187	0.210
1800.000	1.101	89.568	1799.776	6.143	26.010	6.143	26.726	76.711	0.253
1900.000	1.185	96.757	1899.757	6.029	27.997	6.029	28.638	77.847	0.166
2000.000	0.883	109.623	1999.740	5.649	29.749	5.649	30.281	79.249	0.379
2100.000	0.860	125.869	2099.729	4.950	31.083	4.950	31.475	80.952	0.247
2200.000	1.089	138.486	2199.714	3.798	32.321	3.798	32.544	83.297	0.313
2300.000	1.020	137.075	2299.698	2.435	33.558	2.435	33.646	85.850	0.075
2400.000	1.021	124.348	2399.682	1.281	34.899	1.281	34.923	87.898	0.226
2500.000	1.130	140.584	2499.664	0.016	36.261	0.016	36.261	89.974	0.322
2600.000	1.195	131.447	2599.644	-1.436	37.669	-1.436	37.696	92.183	0.196
2700.000	1.220	141.428	2699.622	-2.959	39.114	-2.959	39.226	94.325	0.212
2800.000	1.161	139.106	2799.600	-4.557	40.441	-4.557	40.697	96.429	0.076
2900.000	1.163	142.516	2899.580	-6.128	41.722	-6.128	42.170	98.356	0.069
3000.000	1.372	145.509	2999.555	-7.920	43.018	-7.920	43.741	100.432	0.219
3100.000	1.548	163.435	3099.523	-10.201	44.080	-10.201	45.245	103.030	0.487
3200.000	1.601	164.429	3199.485	-12.841	44.840	-12.841	46.643	105.980	0.060
3300.000	1.874	180.377	3299.440	-15.822	45.205	-15.822	47.894	109.291	0.553
3400.000	1.805	180.073	3399.388	-19.032	45.192	-19.032	49.036	112.838	0.070

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	1.463	192.360	3499.348	-21.854	44.917	-21.854	49.951	115.945	0.488
3600.000	1.494	188.962	3599.315	-24.389	44.440	-24.389	50.693	118.758	0.093
3700.000	1.640	204.483	3699.278	-26.979	43.644	-26.979	51.310	121.723	0.447
3800.000	1.883	188.720	3799.231	-29.905	42.802	-29.905	52.215	124.942	0.539
3900.000	2.552	190.816	3899.155	-33.716	42.135	-33.716	53.964	128.666	0.674
4000.000	3.068	196.928	3999.035	-38.462	40.938	-38.462	56.172	133.214	0.596
4100.000	3.421	199.519	4098.875	-43.834	39.162	-43.834	58.780	138.222	0.382
4200.000	3.536	200.396	4198.691	-49.536	37.091	-49.536	61.884	143.176	0.127
4300.000	3.371	207.366	4298.509	-55.038	34.665	-55.038	65.045	147.796	0.451
4400.000	3.253	220.214	4398.344	-59.816	31.481	-59.816	67.595	152.242	0.750
4500.000	3.016	222.145	4498.194	-63.933	27.884	-63.933	69.749	156.436	0.260
4600.000	2.698	237.201	4598.071	-67.158	24.141	-67.158	71.365	160.228	0.812
4700.000	2.471	245.948	4697.970	-69.312	20.194	-69.312	72.194	163.757	0.454
4800.000	2.318	250.859	4797.882	-70.854	16.314	-70.854	72.708	167.034	0.256
4900.000	2.161	266.788	4897.807	-71.623	12.521	-71.623	72.709	170.084	0.640
5000.000	2.042	270.441	4997.740	-71.715	8.857	-71.715	72.260	172.959	0.179
5100.000	1.858	265.074	5097.682	-71.840	5.460	-71.840	72.047	175.653	0.259
5200.000	1.537	260.407	5197.638	-72.203	2.522	-72.203	72.247	177.999	0.349
5300.000	1.285	260.752	5297.607	-72.607	0.093	-72.607	72.607	179.927	0.253
5400.000	1.075	249.467	5397.586	-73.116	-1.893	-73.116	73.140	181.483	0.312
5500.000	0.881	246.801	5497.572	-73.748	-3.478	-73.748	73.830	182.700	0.199
5600.000	0.621	231.228	5597.563	-74.390	-4.607	-74.390	74.533	183.544	0.329
5700.000	0.631	206.383	5697.557	-75.222	-5.274	-75.222	75.407	184.010	0.269
5800.000	0.501	182.604	5797.553	-76.152	-5.538	-76.152	76.353	184.160	0.266
5900.000	0.398	158.640	5897.550	-76.912	-5.432	-76.912	77.103	184.040	0.212
6000.000	0.512	144.408	5997.546	-77.599	-5.045	-77.599	77.763	183.720	0.160
6100.000	0.493	130.955	6097.543	-78.244	-4.460	-78.244	78.371	183.262	0.119
6200.000	0.623	125.864	6197.538	-78.845	-3.694	-78.845	78.932	182.683	0.139
6300.000	0.591	118.128	6297.532	-79.407	-2.799	-79.407	79.456	182.019	0.088
6400.000	0.722	137.889	6397.526	-80.117	-1.922	-80.117	80.140	181.374	0.260
6500.000	0.890	128.753	6497.516	-81.071	-0.894	-81.071	81.076	180.631	0.210
6600.000	0.910	126.494	6597.504	-82.029	0.351	-82.029	82.030	179.755	0.041
6700.000	1.142	136.411	6697.488	-83.224	1.677	-83.224	83.241	178.846	0.291
6775.000	1.227	142.432	6772.472	-84.402	2.681	-84.402	84.444	178.180	0.200
HORIZONTAL DISPLACEMENT IS 84.444 FEET AT 178.180 DEGREES									