



Company: PDC Energy  
Lease/Well: McCarty / 28-7  
API#: 05-123-13309  
Rig Name: Production / V.E.S.  
State/County: Colorado / Weld County  
Latitude: 40.286, Longitude: -104.892  
Directions are relative to True North  
VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB = Ground Level

DRILLOG GYRO SURVEY CALCULATIONS

Filename: survey.ut  
Minimum Curvature Method  
Report Date/Time: 3/5/2014 / 18:41

Vaughn Energy Services  
Henderson CO.  
303-853-4976  
Norman Cowan

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	0.178	312.022	100.000	0.104	-0.116	0.104	0.156	312.022	0.178
200.000	0.242	319.432	199.999	0.369	-0.368	0.369	0.521	315.013	0.069
300.000	0.287	204.838	299.999	0.302	-0.611	0.302	0.681	296.283	0.445
400.000	0.211	245.048	399.998	-0.003	-0.882	-0.003	0.882	269.797	0.185
500.000	0.464	140.345	499.997	-0.392	-0.791	-0.392	0.883	243.628	0.556
600.000	0.275	261.732	599.995	-0.738	-0.770	-0.738	1.067	226.224	0.651
700.000	0.495	188.850	699.994	-1.199	-1.074	-1.199	1.610	221.858	0.490
800.000	0.198	291.424	799.992	-1.562	-1.302	-1.562	2.033	219.796	0.571
900.000	0.170	272.386	899.992	-1.493	-1.611	-1.493	2.196	227.171	0.067
1000.000	0.054	117.932	999.992	-1.509	-1.717	-1.509	2.286	228.699	0.220
1100.000	0.211	191.933	1099.991	-1.711	-1.714	-1.711	2.422	225.045	0.203
1200.000	0.398	138.803	1199.990	-2.153	-1.524	-2.153	2.638	215.283	0.319
1300.000	0.382	148.675	1299.988	-2.699	-1.122	-2.699	2.923	202.565	0.069
1400.000	0.247	177.265	1399.986	-3.199	-0.938	-3.199	3.334	196.342	0.203
1500.000	0.453	174.597	1499.984	-3.808	-0.891	-3.808	3.911	193.163	0.207
1600.000	0.158	264.030	1599.983	-4.216	-0.991	-4.216	4.331	193.223	0.478
1700.000	0.415	183.909	1699.982	-4.591	-1.153	-4.591	4.734	194.092	0.418
1800.000	0.289	223.959	1799.980	-5.134	-1.352	-5.134	5.309	194.757	0.268
1900.000	0.319	206.202	1899.979	-5.565	-1.650	-5.565	5.805	196.517	0.099
2000.000	0.380	153.502	1999.977	-6.113	-1.625	-6.113	6.325	194.891	0.315
2100.000	0.408	188.868	2099.975	-6.762	-1.532	-6.762	6.933	192.768	0.241
2200.000	0.710	189.065	2199.970	-7.726	-1.685	-7.726	7.907	192.302	0.302
2300.000	0.949	209.144	2299.960	-9.061	-2.186	-9.061	9.321	193.563	0.373
2400.000	1.608	230.518	2399.935	-10.676	-3.672	-10.676	11.290	198.981	0.803
2500.000	1.946	219.430	2499.887	-12.880	-5.834	-12.880	14.139	204.367	0.480
2600.000	2.842	214.339	2599.799	-16.239	-8.311	-16.239	18.242	207.102	0.921
2700.000	3.263	208.009	2699.657	-20.799	-11.046	-20.799	23.550	207.972	0.538
2800.000	4.089	213.964	2799.451	-26.269	-14.374	-26.269	29.944	208.688	0.909
2900.000	4.667	208.023	2899.159	-32.817	-18.278	-32.817	37.564	209.116	0.734
3000.000	4.818	216.543	2998.818	-39.783	-22.690	-39.783	45.799	209.698	0.720
3100.000	5.328	219.863	3098.426	-46.721	-28.166	-46.721	54.555	211.084	0.588
3200.000	5.828	223.818	3197.953	-53.948	-34.657	-53.948	64.121	212.718	0.630
3300.000	6.655	225.444	3297.359	-61.677	-42.302	-61.677	74.790	214.445	0.846
3400.000	6.993	218.916	3396.652	-70.479	-50.255	-70.479	86.562	215.491	0.845

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	7.116	220.428	3495.895	-79.931	-58.096	-79.931	98.813	216.011	0.223
3600.000	7.505	224.878	3595.083	-89.274	-66.721	-89.274	111.452	216.773	0.686
3700.000	8.331	227.902	3694.129	-98.758	-76.704	-98.758	125.047	217.836	0.925
3800.000	9.495	232.385	3792.921	-108.650	-88.614	-108.650	140.204	219.200	1.355
3900.000	10.315	229.079	3891.430	-119.548	-101.913	-119.548	157.092	220.447	0.997
4000.000	10.648	224.139	3989.764	-132.043	-115.111	-132.043	175.174	221.081	0.958
4100.000	11.382	222.185	4087.921	-145.984	-128.171	-145.984	194.266	221.283	0.823
4200.000	11.340	225.526	4185.963	-160.184	-141.813	-160.184	213.939	221.519	0.659
4300.000	10.422	224.159	4284.164	-173.561	-155.130	-173.561	232.785	221.791	0.954
4400.000	10.149	220.322	4382.558	-186.767	-167.132	-186.767	250.630	221.824	0.737
4500.000	10.086	217.833	4481.004	-200.400	-178.204	-200.400	268.174	221.645	0.442
4600.000	10.291	219.456	4579.427	-214.213	-189.252	-214.213	285.838	221.460	0.353
4700.000	10.901	217.236	4677.722	-228.638	-200.650	-228.638	304.197	221.270	0.734
4800.000	10.858	218.429	4775.924	-243.544	-212.225	-243.544	323.038	221.069	0.229
4900.000	10.789	218.333	4874.146	-258.264	-223.884	-258.264	341.796	220.921	0.071
5000.000	10.261	217.559	4972.463	-272.667	-235.119	-272.667	360.039	220.771	0.547
5100.000	9.426	217.957	5070.990	-286.183	-245.584	-286.183	377.111	220.634	0.838
5200.000	8.615	214.438	5169.753	-298.817	-254.856	-298.817	392.738	220.460	0.980
5300.000	7.159	215.697	5268.805	-310.055	-262.728	-310.055	406.399	220.277	1.466
5400.000	6.962	214.603	5368.046	-320.103	-269.805	-320.103	418.642	220.127	0.239
5500.000	6.609	217.471	5467.346	-329.658	-276.748	-329.658	430.423	220.013	0.489
5600.000	7.196	216.836	5566.621	-339.239	-284.003	-339.239	442.426	219.935	0.593
5700.000	7.046	214.147	5665.850	-349.328	-291.201	-349.328	454.784	219.815	0.366
5800.000	6.358	219.250	5765.167	-358.692	-298.148	-358.692	466.425	219.734	0.909
5900.000	5.398	220.193	5864.640	-366.573	-304.687	-366.573	476.666	219.733	0.965
6000.000	5.400	225.282	5964.197	-373.477	-311.066	-373.477	486.053	219.791	0.479
6100.000	4.947	232.331	6063.790	-379.423	-317.822	-379.423	494.947	219.951	0.780
6200.000	4.953	226.011	6163.418	-385.056	-324.341	-385.056	503.453	220.108	0.545
6300.000	5.125	218.570	6263.033	-391.546	-330.232	-391.546	512.212	220.144	0.675
6400.000	5.039	224.473	6362.640	-398.172	-336.094	-398.172	521.057	220.167	0.530
6500.000	4.634	229.093	6462.284	-403.951	-342.223	-403.951	529.427	220.271	0.562
6600.000	4.138	237.191	6561.992	-408.552	-348.309	-408.552	536.874	220.449	0.792
6700.000	3.678	231.550	6661.760	-412.501	-353.853	-412.501	543.479	220.624	0.599
6800.000	3.523	220.101	6761.563	-416.846	-358.345	-416.846	549.701	220.684	0.734
6900.000	3.561	229.941	6861.373	-421.195	-362.701	-421.195	555.839	220.732	0.608
7000.000	4.125	224.142	6961.148	-425.775	-367.582	-425.775	562.495	220.805	0.685
7100.000	4.074	215.230	7060.894	-431.257	-372.136	-431.257	569.621	220.791	0.639
7200.000	4.229	223.326	7160.632	-436.841	-376.715	-436.841	576.840	220.773	0.606

<div> HORIZONTAL DISPLACEMENT IS  576.840 FEET AT 220.773 DEGREES </div>
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