



Company: PDC Energy
Lease/Well: McCarty / 30-1
API#: 05-123-12076
Rig Name: Production / V.E.S.
State/County: Colorado / Weld County
Latitude: 40.286, Longitude: -104.939
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: 2/21/2014 / 17:21

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	0.258	295.267	100.000	0.096	-0.203	0.096	0.225	295.267	0.258
200.000	0.260	275.289	199.999	0.213	-0.632	0.213	0.667	288.605	0.090
300.000	0.511	290.170	299.996	0.388	-1.277	0.388	1.334	286.888	0.269
400.000	0.289	287.732	399.994	0.618	-1.936	0.618	2.033	287.713	0.223
500.000	0.800	292.775	499.989	0.966	-2.820	0.966	2.981	288.899	0.513
600.000	0.463	253.906	599.983	1.124	-3.852	1.124	4.013	286.265	0.527
700.000	0.508	307.794	699.980	1.284	-4.590	1.284	4.767	285.623	0.442
800.000	0.467	250.206	799.977	1.417	-5.324	1.417	5.510	284.906	0.471
900.000	0.768	267.691	899.971	1.252	-6.378	1.252	6.500	281.109	0.352
1000.000	0.511	289.464	999.965	1.374	-7.468	1.374	7.594	280.424	0.349
1100.000	0.721	311.624	1099.959	1.940	-8.359	1.940	8.582	283.069	0.314
1200.000	0.764	263.181	1199.952	2.279	-9.492	2.279	9.762	283.502	0.611
1300.000	0.254	322.075	1299.948	2.374	-10.290	2.374	10.560	282.994	0.669
1400.000	0.310	279.355	1399.947	2.593	-10.693	2.593	11.003	283.630	0.212
1500.000	0.293	334.753	1499.946	2.869	-11.069	2.869	11.435	284.528	0.281
1600.000	0.342	290.734	1599.944	3.206	-11.458	3.206	11.898	285.632	0.242
1700.000	0.960	305.686	1699.937	3.800	-12.418	3.800	12.986	287.017	0.636
1800.000	0.921	287.725	1799.924	4.534	-13.863	4.534	14.586	288.109	0.296
1900.000	0.736	255.191	1899.914	4.614	-15.250	4.614	15.933	286.834	0.497
2000.000	1.180	289.808	1999.901	4.799	-16.840	4.799	17.510	285.906	0.710
2100.000	0.990	284.138	2099.883	5.359	-18.646	5.359	19.401	286.034	0.218
2200.000	0.933	245.403	2199.870	5.231	-20.224	5.231	20.890	284.501	0.640
2300.000	1.004	251.947	2299.856	4.620	-21.797	4.620	22.281	281.968	0.131
2400.000	0.984	233.345	2399.841	3.836	-23.319	3.836	23.632	279.343	0.322
2500.000	0.873	236.959	2499.828	2.908	-24.646	2.908	24.817	276.730	0.126
2600.000	1.177	245.901	2599.812	2.074	-26.222	2.074	26.304	274.522	0.343
2700.000	1.320	229.681	2699.788	0.909	-28.038	0.909	28.052	271.857	0.380
2800.000	0.460	246.403	2799.775	0.003	-29.284	0.003	29.284	270.007	0.890
2900.000	0.396	225.999	2899.773	-0.398	-29.900	-0.398	29.903	269.238	0.164
3000.000	0.519	227.749	2999.769	-0.943	-30.484	-0.943	30.499	268.229	0.124
3100.000	0.786	206.377	3099.763	-1.862	-31.125	-1.862	31.180	266.576	0.357
3200.000	1.220	237.699	3199.748	-3.046	-32.329	-3.046	32.472	264.618	0.684
3300.000	1.052	228.138	3299.728	-4.227	-33.913	-4.227	34.176	262.894	0.252
3400.000	1.136	249.377	3399.711	-5.189	-35.525	-5.189	35.902	261.689	0.411

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	1.273	247.901	3499.688	-5.956	-37.482	-5.956	37.952	260.970	0.141
3600.000	1.179	267.075	3599.666	-6.427	-39.538	-6.427	40.057	260.767	0.419
3700.000	1.001	255.332	3699.648	-6.701	-41.410	-6.701	41.949	260.809	0.285
3800.000	0.897	251.163	3799.634	-7.174	-42.996	-7.174	43.591	260.527	0.124
3900.000	0.939	225.932	3899.622	-7.997	-44.326	-7.997	45.042	259.773	0.403
4000.000	0.993	236.817	3999.608	-9.042	-45.641	-9.042	46.528	258.794	0.191
4100.000	0.924	288.863	4099.595	-9.256	-47.129	-9.256	48.029	258.889	0.843
4200.000	0.824	268.998	4199.584	-9.008	-48.610	-9.008	49.438	259.502	0.317
4300.000	0.662	260.874	4299.576	-9.112	-49.899	-9.112	50.724	259.652	0.193
4400.000	0.971	279.085	4399.566	-9.070	-51.306	-9.070	52.101	259.975	0.400
4500.000	0.682	220.562	4499.557	-9.388	-52.529	-9.388	53.361	259.867	0.846
4600.000	0.609	195.019	4599.551	-10.353	-53.054	-10.353	54.054	258.958	0.294
4700.000	1.042	186.509	4699.540	-11.769	-53.294	-11.769	54.578	257.547	0.449
4800.000	0.786	239.981	4799.529	-13.015	-53.991	-13.015	55.537	256.447	0.853
4900.000	0.617	166.162	4899.523	-13.881	-54.456	-13.881	56.197	255.700	0.853
5000.000	0.886	225.851	4999.516	-14.942	-54.881	-14.942	56.879	254.770	0.783
5100.000	0.758	251.714	5099.506	-15.688	-56.064	-15.688	58.217	254.367	0.388
5200.000	0.591	213.847	5199.499	-16.324	-56.979	-16.324	59.271	254.014	0.465
5300.000	0.722	190.879	5299.493	-17.370	-57.385	-17.370	59.956	253.159	0.291
5400.000	0.334	196.191	5399.488	-18.268	-57.585	-18.268	60.413	252.399	0.391
5500.000	0.680	196.862	5499.484	-19.116	-57.838	-19.116	60.915	251.711	0.346
5600.000	0.566	203.659	5599.479	-20.136	-58.209	-20.136	61.593	250.918	0.135
5700.000	0.749	128.236	5699.473	-20.993	-57.894	-20.993	61.582	250.069	0.817
5800.000	0.317	183.498	5799.469	-21.674	-57.397	-21.674	61.353	249.313	0.625
5900.000	0.616	189.225	5899.466	-22.481	-57.501	-22.481	61.739	248.646	0.302
6000.000	0.612	223.347	5999.461	-23.400	-57.953	-23.400	62.499	248.012	0.360
6100.000	0.569	159.085	6099.456	-24.252	-58.143	-24.252	62.998	247.358	0.629
6200.000	0.457	182.996	6199.452	-25.115	-57.986	-25.115	63.192	246.582	0.239
6300.000	0.706	235.082	6299.448	-25.866	-58.513	-25.866	63.975	246.152	0.558
6400.000	0.161	277.315	6399.445	-26.201	-59.157	-26.201	64.700	246.111	0.597
6500.000	1.018	221.284	6499.439	-26.851	-59.883	-26.851	65.627	245.849	0.938
6600.000	0.593	277.334	6599.430	-27.452	-60.982	-27.452	66.877	245.764	0.845
6700.000	0.603	267.920	6699.425	-27.405	-62.021	-27.405	67.806	246.161	0.099
6800.000	0.708	275.411	6799.418	-27.366	-63.162	-27.366	68.836	246.574	0.136
6900.000	0.660	318.891	6899.412	-26.874	-64.157	-26.874	69.558	247.272	0.509
7000.000	0.656	260.384	6999.406	-26.535	-65.100	-26.535	70.300	247.824	0.643
7100.000	0.389	290.570	7099.402	-26.511	-65.982	-26.511	71.109	248.110	0.375
7200.000	0.715	257.996	7199.397	-26.522	-66.911	-26.522	71.975	248.378	0.440
7250.000	0.607	276.190	7249.394	-26.558	-67.479	-26.558	72.517	248.517	0.470
HORIZONTAL DISPLACEMENT IS 72.517 FEET AT 248.517 DEGREES									