



Company: PDC Energy

Well: McCarty 28-1

API#: 05-123-12931

Rig Name: Production / V.E.S.

State/County: Colorado / Weld County

Latitude: 40.285, Longitude: -104.902

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: gyro-de_01.ut

Minimum Curvature Method

Report Date/Time: 6/13/2014 / 13:24

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	0.146	350.172	100.000	0.125	-0.022	0.125	0.127	350.172	0.146
200.000	0.196	43.556	200.000	0.374	0.075	0.374	0.382	11.271	0.160
300.000	0.094	83.652	299.999	0.507	0.274	0.507	0.577	28.388	0.138
400.000	0.264	345.924	399.999	0.740	0.300	0.740	0.798	22.067	0.292
500.000	0.676	308.477	499.995	1.330	-0.218	1.330	1.348	350.692	0.493
600.000	0.224	356.263	599.992	1.892	-0.693	1.892	2.015	339.893	0.551
700.000	0.602	282.595	699.990	2.201	-1.218	2.201	2.516	331.043	0.580
800.000	0.767	343.470	799.984	2.958	-1.921	2.958	3.527	326.994	0.708
900.000	0.647	1.991	899.977	4.164	-2.092	4.164	4.660	333.323	0.257
1000.000	0.697	340.779	999.970	5.302	-2.273	5.302	5.769	336.799	0.252
1100.000	0.506	281.613	1099.965	5.965	-2.906	5.965	6.635	334.029	0.617
1200.000	0.403	303.620	1199.962	6.249	-3.632	6.249	7.228	329.836	0.201
1300.000	0.289	242.787	1299.961	6.329	-4.149	6.329	7.568	326.753	0.364
1400.000	0.433	351.856	1399.959	6.588	-4.427	6.588	7.937	326.103	0.594
1500.000	0.111	357.839	1499.958	7.059	-4.484	7.059	8.363	327.578	0.323
1600.000	0.457	333.449	1599.957	7.513	-4.666	7.513	8.844	328.160	0.359
1700.000	0.635	334.818	1699.952	8.372	-5.080	8.372	9.793	328.751	0.179
1800.000	0.274	234.908	1799.950	8.736	-5.511	8.736	10.329	327.754	0.734
1900.000	0.325	355.388	1899.949	8.882	-5.730	8.882	10.570	327.174	0.521
2000.000	0.053	25.748	1999.949	9.206	-5.733	9.206	10.845	328.091	0.281
2100.000	0.185	352.150	2099.948	9.407	-5.735	9.407	11.017	328.634	0.144
2200.000	0.219	238.071	2199.948	9.466	-5.918	9.466	11.164	327.985	0.339
2300.000	0.091	8.832	2299.948	9.444	-6.068	9.444	11.225	327.277	0.287
2400.000	0.376	331.465	2399.947	9.811	-6.213	9.811	11.613	327.657	0.309
2500.000	0.571	345.827	2499.943	10.583	-6.492	10.583	12.415	328.475	0.227
2600.000	0.386	244.882	2599.941	10.923	-6.919	10.923	12.930	327.650	0.748
2700.000	0.602	254.757	2699.937	10.642	-7.731	10.642	13.154	324.004	0.232
2800.000	1.422	268.942	2799.921	10.481	-9.478	10.481	14.131	317.876	0.851
2900.000	1.986	242.605	2899.878	9.661	-12.257	9.661	15.607	308.243	0.951
3000.000	1.881	216.524	2999.823	7.545	-14.773	7.545	16.588	297.054	0.878
3100.000	2.057	224.992	3099.764	4.957	-17.018	4.957	17.725	286.240	0.340
3200.000	2.188	217.319	3199.696	2.170	-19.444	2.170	19.565	276.369	0.312
3300.000	2.509	238.200	3299.613	-0.501	-22.461	-0.501	22.467	268.722	0.908
3400.000	2.210	253.371	3399.530	-2.206	-26.168	-2.206	26.261	265.181	0.690

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	2.378	242.626	3499.450	-3.712	-29.858	-3.712	30.088	262.914	0.461
3600.000	2.182	263.514	3599.372	-4.881	-33.592	-4.881	33.945	261.733	0.849
3700.000	2.465	264.998	3699.290	-5.283	-37.626	-5.283	37.995	262.007	0.289
3800.000	2.304	241.572	3799.206	-6.427	-41.536	-6.427	42.031	261.204	0.981
3900.000	2.990	254.832	3899.099	-8.067	-45.821	-8.067	46.526	260.015	0.916
4000.000	2.163	266.635	3998.998	-8.860	-50.222	-8.860	50.998	259.995	0.979
4100.000	2.840	257.327	4098.903	-9.514	-54.523	-9.514	55.347	260.102	0.788
4200.000	2.324	257.101	4198.801	-10.510	-58.917	-10.510	59.847	259.885	0.517
4300.000	2.954	267.264	4298.695	-11.086	-63.467	-11.086	64.428	260.092	0.783
4400.000	2.794	255.524	4398.570	-11.818	-68.401	-11.818	69.415	260.197	0.609
4500.000	2.691	270.521	4498.457	-12.406	-73.108	-12.406	74.154	260.369	0.723
4600.000	2.648	270.380	4598.348	-12.370	-77.765	-12.370	78.743	260.962	0.043
4700.000	2.683	286.618	4698.241	-11.685	-82.318	-11.685	83.143	261.921	0.753
4800.000	2.189	275.194	4798.151	-10.843	-86.463	-10.843	87.140	262.852	0.691
4900.000	2.305	255.012	4898.076	-11.190	-90.307	-11.190	90.998	262.937	0.795
5000.000	2.077	259.092	4998.003	-12.053	-94.029	-12.053	94.798	262.696	0.276
5100.000	1.876	277.624	5097.944	-12.178	-97.430	-12.178	98.188	262.875	0.667
5200.000	1.408	253.234	5197.904	-12.316	-100.229	-12.316	100.983	262.995	0.831
5300.000	1.353	266.088	5297.875	-12.751	-102.584	-12.751	103.373	262.915	0.314
5400.000	1.169	287.090	5397.852	-12.532	-104.737	-12.532	105.484	263.177	0.494
5500.000	0.780	236.052	5497.839	-12.612	-106.276	-12.612	107.022	263.232	0.910
5600.000	0.898	268.979	5597.829	-13.006	-107.624	-13.006	108.407	263.109	0.489
5700.000	0.833	305.362	5697.818	-12.600	-109.000	-12.600	109.726	263.406	0.544
5800.000	1.072	268.252	5797.805	-12.208	-110.527	-12.208	111.199	263.697	0.647
5900.000	0.780	310.310	5897.793	-11.796	-111.981	-11.796	112.601	263.987	0.718
6000.000	0.998	286.058	5997.781	-11.115	-113.337	-11.115	113.881	264.399	0.430
6100.000	0.985	301.481	6097.766	-10.425	-114.907	-10.425	115.379	264.816	0.266
6200.000	0.729	316.094	6197.755	-9.518	-116.081	-9.518	116.470	265.312	0.335
6300.000	0.925	333.722	6297.745	-8.336	-116.879	-8.336	117.176	265.920	0.319
6400.000	0.576	296.519	6397.737	-7.388	-117.686	-7.388	117.918	266.408	0.582
6500.000	0.570	289.904	6497.732	-6.994	-118.604	-6.994	118.810	266.625	0.066
6600.000	0.467	307.471	6597.728	-6.577	-119.394	-6.577	119.575	266.847	0.188
6700.000	0.474	359.354	6697.725	-5.915	-119.723	-5.915	119.869	267.171	0.412
6800.000	0.332	316.626	6797.722	-5.291	-119.926	-5.291	120.043	267.474	0.322
6900.000	0.575	309.628	6897.719	-4.761	-120.511	-4.761	120.605	267.738	0.249
7000.000	0.271	275.167	6997.717	-4.419	-121.133	-4.419	121.214	267.911	0.384
7100.000	0.218	325.542	7097.716	-4.242	-121.476	-4.242	121.550	268.000	0.213
7200.000	0.327	354.266	7197.715	-3.801	-121.612	-3.801	121.671	268.210	0.172
7250.000	0.355	267.890	7247.714	-3.665	-121.781	-3.665	121.836	268.276	0.935

HORIZONTAL DISPLACEMENT IS
121.836 FEET AT 268.276 DEGREES