



Company: PDC Energy
 Well: Becker 5
 API: 05-123-22595
 Rig Name: Production/ VES
 State/County: Colorado/Weld
 Latitude: 40.258, Longitude: -104.579
 Directions are relative to True North
 VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB= Ground Level

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: becker 5-de_01.ut
 Minimum Curvature Method
 Report Date/Time: 4/28/2014 / 13:39

Vaughn Survey International
 Henderson, CO 80640
 303-853-4976
 Sean Bratt

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	0.932	277.373	99.996	0.104	-0.806	0.104	0.813	277.373	0.932
200.000	1.013	272.863	199.981	0.253	-2.496	0.253	2.508	275.785	0.112
300.000	0.670	276.855	299.970	0.367	-3.959	0.367	3.976	275.293	0.348
400.000	0.468	322.575	399.966	0.761	-4.788	0.761	4.848	279.027	0.480
500.000	0.432	295.629	499.963	1.248	-5.376	1.248	5.519	283.068	0.212
600.000	0.345	279.649	599.961	1.461	-6.013	1.461	6.188	283.662	0.138
700.000	0.324	316.842	699.959	1.718	-6.503	1.718	6.726	284.801	0.214
800.000	0.591	330.077	799.956	2.371	-6.953	2.371	7.346	288.832	0.285
900.000	0.489	293.306	899.952	2.987	-7.602	2.987	8.168	291.450	0.354
1000.000	0.636	323.010	999.947	3.599	-8.328	3.599	9.073	293.373	0.322
1100.000	0.504	340.959	1099.942	4.458	-8.806	4.458	9.870	296.854	0.221
1200.000	0.351	298.849	1199.939	5.022	-9.218	5.022	10.497	298.583	0.339
1300.000	0.487	353.812	1299.937	5.592	-9.532	5.592	11.051	300.399	0.405
1400.000	0.275	9.620	1399.935	6.251	-9.538	6.251	11.403	303.240	0.235
1500.000	0.010	339.517	1499.934	6.495	-9.501	6.495	11.509	304.360	0.266
1600.000	0.172	61.190	1599.934	6.576	-9.372	6.576	11.449	305.057	0.171
1700.000	0.108	169.469	1699.934	6.556	-9.223	6.556	11.316	305.407	0.230
1800.000	0.235	81.258	1799.934	6.495	-9.003	6.495	11.101	305.806	0.255
1900.000	0.599	347.632	1899.932	7.036	-8.913	7.036	11.356	308.290	0.657
2000.000	1.256	9.752	1999.918	8.627	-8.839	8.627	12.351	314.305	0.737
2100.000	1.767	352.059	2099.884	11.235	-8.866	11.235	14.312	321.719	0.687
2200.000	2.205	350.327	2199.823	14.658	-9.403	14.658	17.415	327.322	0.442
2300.000	2.300	348.618	2299.746	18.522	-10.122	18.522	21.107	331.344	0.117
2400.000	2.322	352.453	2399.665	22.498	-10.784	22.498	24.949	334.390	0.156
2500.000	2.553	358.078	2499.574	26.732	-11.125	26.732	28.955	337.405	0.332
2600.000	2.637	349.302	2599.472	31.219	-11.627	31.219	33.313	339.574	0.406
2700.000	2.437	355.447	2699.374	35.598	-12.222	35.598	37.638	341.051	0.337
2800.000	2.205	354.892	2799.292	39.634	-12.562	39.634	41.577	342.413	0.234
2900.000	2.131	7.715	2899.221	43.392	-12.484	43.392	45.152	343.949	0.490
3000.000	2.133	7.488	2999.152	47.079	-11.992	47.079	48.582	345.709	0.009
3100.000	1.619	27.885	3099.099	50.172	-11.089	50.172	51.383	347.537	0.835
3200.000	1.443	352.527	3199.066	52.670	-10.592	52.670	53.724	348.629	0.945
3300.000	0.986	31.954	3299.045	54.649	-10.300	54.649	55.611	349.326	0.926
3400.000	0.763	31.161	3399.033	55.949	-9.500	55.949	56.750	350.363	0.224
3500.000	0.408	278.697	3499.030	56.573	-9.508	56.573	57.366	350.460	0.993

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
3600.000	0.557	259.889	3599.026	56.541	-10.338	56.541	57.479	349.638	0.215
3700.000	0.506	265.525	3699.022	56.421	-11.257	56.421	57.533	348.717	0.073
3800.000	0.828	304.380	3799.015	56.795	-12.294	56.795	58.110	347.786	0.537
3900.000	0.885	257.672	3899.005	57.038	-13.644	57.038	58.647	346.547	0.681
4000.000	0.718	270.052	3998.996	56.874	-15.025	56.874	58.825	345.201	0.239
4100.000	1.008	274.035	4098.984	56.936	-16.530	56.936	59.287	343.811	0.296
4200.000	1.150	253.040	4198.967	56.705	-18.368	56.705	59.606	342.052	0.417
4300.000	0.755	243.852	4298.953	56.122	-19.920	56.122	59.552	340.458	0.422
4400.000	0.984	283.449	4398.942	56.031	-21.347	56.031	59.960	339.144	0.627
4500.000	1.009	264.790	4498.927	56.151	-23.059	56.151	60.701	337.674	0.324
4600.000	0.961	255.920	4598.913	55.867	-24.749	55.867	61.104	336.106	0.160
4700.000	0.677	282.990	4698.903	55.796	-26.138	55.796	61.615	334.899	0.472
4800.000	0.564	295.248	4798.897	56.139	-27.160	56.139	62.364	334.183	0.174
4900.000	1.492	316.644	4898.880	57.295	-28.499	57.295	63.992	333.554	0.988
5000.000	1.445	313.292	4998.847	59.107	-30.310	59.107	66.425	332.851	0.098
5100.000	1.463	330.354	5098.815	61.080	-31.859	61.080	68.890	332.454	0.432
5200.000	1.601	338.719	5198.780	63.492	-32.998	63.492	71.554	332.538	0.262
5300.000	1.230	350.469	5298.749	65.852	-33.682	65.852	73.966	332.911	0.469
5400.000	0.780	354.524	5398.734	67.588	-33.925	67.588	75.624	333.346	0.456
5500.000	0.784	338.159	5498.724	68.900	-34.244	68.900	76.941	333.572	0.223
5600.000	0.544	326.341	5598.718	69.930	-34.762	69.930	78.093	333.568	0.275
5700.000	0.521	325.398	5698.713	70.699	-35.283	70.699	79.014	333.478	0.025
5800.000	0.236	0.727	5798.711	71.279	-35.539	71.279	79.648	333.500	0.356
5900.000	0.512	318.768	5898.709	71.821	-35.831	71.821	80.263	333.486	0.372
6000.000	0.422	317.304	5998.706	72.428	-36.375	72.428	81.049	333.333	0.091
6100.000	0.604	220.189	6098.703	72.295	-36.964	72.295	81.197	332.919	0.778
6200.000	0.197	302.614	6198.701	71.985	-37.450	71.985	81.144	332.515	0.610
6300.000	0.643	282.517	6298.698	72.200	-38.143	72.200	81.656	332.153	0.463
6400.000	0.953	351.619	6398.690	73.144	-38.813	73.144	82.804	332.048	0.941
6500.000	0.862	337.376	6498.678	74.662	-39.223	74.662	84.337	332.285	0.243
6600.000	1.354	306.601	6598.660	76.060	-40.461	76.060	86.153	331.989	0.755
6700.000	1.421	332.004	6698.631	77.859	-41.991	77.859	88.461	331.661	0.613

HORIZONTAL DISPLACEMENT IS
88.461 FEET AT 331.661 DEGREES