



Company: PDC Energy  
Well: Becker 12-10I  
API: 05-123-24878  
Rig Name: Production/ VES  
State/County: Colorado/Weld  
Latitude: 40.255, Longitude: -104.570  
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: hagyar-de\_01.ut  
Minimum Curvature Method  
Report Date/Time: 7/14/2014 / 09:25

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	0.877	66.770	99.996	0.302	0.703	0.302	0.765	66.770	0.877
200.000	0.745	60.171	199.986	0.927	1.970	0.927	2.178	64.805	0.162
300.000	0.594	77.288	299.979	1.364	3.040	1.364	3.332	65.829	0.249
400.000	0.346	93.696	399.976	1.459	3.846	1.459	4.114	69.231	0.279
500.000	0.471	99.072	499.973	1.374	4.554	1.374	4.757	73.204	0.130
600.000	0.493	133.006	599.970	1.016	5.274	1.016	5.371	79.096	0.282
700.000	0.608	148.314	699.965	0.271	5.868	0.271	5.874	87.359	0.186
800.000	0.598	163.645	799.960	-0.681	6.293	-0.681	6.330	96.179	0.161
900.000	0.382	143.963	899.956	-1.451	6.636	-1.451	6.793	102.336	0.271
1000.000	0.429	108.844	999.954	-1.842	7.187	-1.842	7.419	104.375	0.249
1100.000	0.183	106.191	1099.952	-2.008	7.695	-2.008	7.953	104.621	0.246
1200.000	0.317	103.618	1199.951	-2.117	8.117	-2.117	8.389	104.618	0.134
1300.000	0.315	103.846	1299.950	-2.248	8.653	-2.248	8.940	104.564	0.002
1400.000	0.188	162.621	1399.949	-2.470	8.969	-2.470	9.303	105.399	0.271
1500.000	0.321	168.868	1499.948	-2.902	9.072	-2.902	9.525	107.738	0.136
1600.000	0.312	157.664	1599.947	-3.429	9.230	-3.429	9.846	110.382	0.063
1700.000	0.314	166.289	1699.945	-3.948	9.398	-3.948	10.194	112.786	0.047
1800.000	0.449	196.993	1799.943	-4.590	9.349	-4.590	10.415	116.147	0.240
1900.000	0.625	240.619	1899.939	-5.232	8.759	-5.232	10.203	120.852	0.431
2000.000	0.977	252.215	1999.929	-5.760	7.472	-5.760	9.434	127.631	0.386
2100.000	1.081	285.543	2099.914	-5.768	5.751	-5.768	8.145	135.085	0.598
2200.000	1.308	285.575	2199.892	-5.209	3.743	-5.209	6.414	144.301	0.227
2300.000	1.231	283.148	2299.867	-4.658	1.597	-4.658	4.924	161.074	0.093
2400.000	1.517	303.896	2399.839	-3.675	-0.548	-3.675	3.716	188.477	0.569
2500.000	1.558	309.520	2499.803	-2.072	-2.695	-2.072	3.400	232.445	0.156
2600.000	1.849	313.908	2599.759	-0.088	-4.907	-0.088	4.907	268.974	0.319
2700.000	1.627	309.581	2699.713	1.936	-7.163	1.936	7.420	285.121	0.258
2800.000	1.722	309.419	2799.670	3.794	-9.418	3.794	10.153	291.943	0.096
2900.000	2.043	321.760	2899.617	6.149	-11.682	6.149	13.202	297.759	0.516
3000.000	2.119	325.393	2999.551	9.071	-13.836	9.071	16.544	303.248	0.152
3100.000	2.401	328.972	3099.473	12.387	-15.965	12.387	20.207	307.806	0.315
3200.000	2.029	323.182	3199.398	15.599	-18.106	15.599	23.898	310.746	0.433
3300.000	1.649	317.934	3299.346	18.084	-20.131	18.084	27.060	311.934	0.415
3400.000	1.547	302.553	3399.308	19.879	-22.233	19.879	29.824	311.801	0.440
3500.000	1.665	288.603	3499.269	21.068	-24.747	21.068	32.501	310.409	0.407

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	1.760	304.159	3599.225	22.394	-27.395	22.394	35.384	309.264	0.473
3700.000	1.517	300.012	3699.184	23.919	-29.812	23.919	38.221	308.740	0.271
3800.000	1.465	305.526	3799.150	25.323	-31.998	25.323	40.806	308.358	0.153
3900.000	1.639	294.612	3899.114	26.661	-34.338	26.661	43.473	307.827	0.342
4000.000	1.579	297.036	3999.074	27.883	-36.866	27.883	46.223	307.102	0.090
4100.000	1.876	300.439	4099.029	29.339	-39.504	29.339	49.207	306.600	0.313
4200.000	1.858	299.193	4198.976	30.959	-42.331	30.959	52.444	306.180	0.044
4300.000	1.732	309.240	4298.927	32.705	-44.916	32.705	55.562	306.060	0.339
4400.000	2.045	296.961	4398.873	34.470	-47.677	34.470	58.833	305.867	0.510
4500.000	2.188	291.429	4498.805	35.977	-51.045	35.977	62.449	305.176	0.249
4600.000	2.143	308.446	4598.734	37.837	-54.287	37.837	66.171	304.876	0.642
4700.000	1.672	288.422	4698.680	39.461	-57.135	39.461	69.438	304.631	0.809
4800.000	1.900	304.395	4798.632	40.858	-59.888	40.858	72.498	304.304	0.545
4900.000	1.778	313.703	4898.580	42.866	-62.377	42.866	75.686	304.497	0.322
5000.000	2.109	300.294	4998.523	44.866	-65.087	44.866	79.053	304.579	0.561
5100.000	2.289	285.096	5098.450	46.315	-68.604	46.315	82.774	304.023	0.608
5200.000	2.422	278.553	5198.366	47.149	-72.622	47.149	86.585	302.993	0.300
5300.000	2.660	262.536	5298.269	47.162	-77.013	47.162	90.307	301.483	0.746
5400.000	2.896	243.904	5398.153	45.749	-81.583	45.749	93.535	299.282	0.929
5500.000	2.910	252.042	5498.025	43.855	-86.267	43.855	96.774	296.947	0.412
5600.000	2.526	254.212	5597.913	42.473	-90.801	42.473	100.244	295.068	0.398
5700.000	2.188	251.988	5697.828	41.283	-94.737	41.283	103.341	293.546	0.350
5800.000	1.761	253.293	5797.768	40.251	-98.024	40.251	105.966	292.325	0.429
5900.000	2.148	254.591	5897.710	39.312	-101.302	39.312	108.662	291.210	0.389
6000.000	2.117	265.432	5997.641	38.667	-104.949	38.667	111.846	290.226	0.404
6100.000	2.496	261.644	6097.560	38.203	-108.946	38.203	115.450	289.324	0.408
6200.000	2.592	254.258	6197.462	37.273	-113.277	37.273	119.252	288.214	0.341
6300.000	2.911	274.038	6297.349	36.839	-117.986	36.839	123.603	287.340	0.995
6400.000	2.894	267.257	6397.221	36.897	-123.040	36.897	128.453	286.693	0.344
6500.000	3.169	267.529	6497.081	36.657	-128.323	36.657	133.456	285.942	0.276
6600.000	3.236	262.948	6596.925	36.191	-133.886	36.191	138.691	285.126	0.264

HORIZONTAL DISPLACEMENT IS  
138.691 FEET AT 285.126 DEGREES