



Company: PDC Energy
 Well: Becker 5-10
 API: 05-123-16974
 Rig Name: Production/Nabors
 State/County: Colorado / Weld
 Latitude: 40.25992, Longitude: -104.56774
 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: hagro-de_01_mrg.ut

Minimum Curvature Method

Report Date/Time: 3/16/2015 / 14:52

VES Survey International

Henderson Colorado

303-853-4976

Justin Williams

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	1.269	112.300	99.992	-0.420	1.025	-0.420	1.108	112.300	1.269
200.000	1.121	110.645	199.970	-1.186	2.965	-1.186	3.193	111.793	0.153
300.000	0.429	65.423	299.961	-1.375	4.220	-1.375	4.439	108.042	0.874
400.000	0.327	101.293	399.959	-1.275	4.840	-1.275	5.005	104.757	0.252
500.000	0.231	86.265	499.958	-1.318	5.321	-1.318	5.482	103.908	0.119
600.000	0.106	335.338	599.957	-1.220	5.484	-1.220	5.618	102.544	0.287
700.000	0.115	186.451	699.957	-1.236	5.434	-1.236	5.573	102.810	0.213
800.000	0.148	135.584	799.957	-1.428	5.514	-1.428	5.695	104.517	0.117
900.000	0.276	282.283	899.957	-1.469	5.369	-1.469	5.566	105.301	0.408
1000.000	0.295	266.626	999.956	-1.433	4.877	-1.433	5.083	106.373	0.080
1100.000	0.469	47.980	1099.955	-1.174	4.924	-1.174	5.062	103.413	0.723
1200.000	0.292	72.540	1199.952	-0.824	5.471	-0.824	5.533	98.565	0.237
1300.000	0.148	336.193	1299.952	-0.629	5.662	-0.629	5.697	96.342	0.342
1400.000	0.542	61.143	1399.950	-0.283	6.024	-0.283	6.030	92.687	0.549
1500.000	0.311	320.987	1499.948	0.157	6.267	0.157	6.269	88.569	0.671
1600.000	0.414	297.401	1599.946	0.534	5.775	0.534	5.800	84.720	0.179
1700.000	0.967	302.961	1699.939	1.159	4.747	1.159	4.886	76.282	0.556
1800.000	0.926	357.372	1799.927	2.425	4.002	2.425	4.680	58.785	0.866
1900.000	0.744	354.579	1899.916	3.879	3.904	3.879	5.503	45.180	0.187
2000.000	0.995	309.021	1999.906	5.072	3.168	5.072	5.980	31.987	0.712
2100.000	1.160	353.902	2099.890	6.625	2.386	6.625	7.042	19.806	0.836
2200.000	1.105	319.016	2199.872	8.359	1.646	8.359	8.520	11.140	0.681
2300.000	1.298	274.362	2299.852	9.173	-0.116	9.173	9.174	359.276	0.930
2400.000	1.613	243.719	2399.821	8.636	-2.507	8.636	8.993	343.810	0.827
2500.000	1.761	263.055	2499.778	7.827	-5.295	7.827	9.450	325.924	0.585
2600.000	2.292	254.705	2599.716	7.114	-8.749	7.114	11.276	309.114	0.607
2700.000	2.344	232.846	2699.636	5.351	-12.308	5.351	13.421	293.499	0.880
2800.000	2.520	248.489	2799.547	3.310	-15.983	3.310	16.322	281.701	0.684
2900.000	1.909	262.170	2899.472	2.277	-19.679	2.277	19.810	276.600	0.804
3000.000	2.654	257.523	2999.392	1.550	-23.590	1.550	23.641	273.759	0.767
3100.000	2.259	244.709	3099.301	0.208	-27.632	0.208	27.633	270.431	0.674
3200.000	2.568	261.732	3199.213	-0.956	-31.630	-0.956	31.645	268.269	0.777
3300.000	3.150	251.351	3299.089	-2.157	-36.450	-2.157	36.514	266.614	0.777
3400.000	2.500	236.985	3398.968	-4.224	-40.883	-4.224	41.100	264.101	0.957

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	1.532	237.921	3498.905	-6.122	-43.845	-6.122	44.270	262.051	0.968
3600.000	0.631	247.765	3598.887	-7.041	-45.487	-7.041	46.029	261.201	0.917
3700.000	0.570	186.046	3698.882	-7.744	-46.050	-7.744	46.696	260.454	0.618
3800.000	0.555	249.446	3798.878	-8.409	-46.556	-8.409	47.309	259.761	0.592
3900.000	0.787	226.549	3898.871	-9.052	-47.508	-9.052	48.363	259.212	0.350
4000.000	0.616	175.174	3998.865	-10.060	-47.962	-10.060	49.005	258.154	0.628
4100.000	0.521	267.658	4098.861	-10.615	-48.371	-10.615	49.522	257.623	0.824
4200.000	0.746	240.379	4198.855	-10.955	-49.391	-10.955	50.592	257.494	0.370
4300.000	0.900	219.422	4298.845	-11.884	-50.456	-11.884	51.837	256.747	0.336
4400.000	1.373	236.343	4398.826	-13.155	-51.953	-13.155	53.592	255.791	0.575
4450.000	0.946	227.298	4448.815	-13.767	-52.755	-13.767	54.521	255.374	0.927
4500.000	1.158	265.178	4498.807	-14.089	-53.562	-14.089	55.384	255.262	1.423
4600.000	0.920	256.980	4598.791	-14.355	-55.351	-14.355	57.182	255.461	0.280
4700.000	0.596	247.363	4698.782	-14.736	-56.614	-14.736	58.500	255.410	0.347
4800.000	0.486	243.008	4798.778	-15.129	-57.472	-15.129	59.430	255.252	0.117
4900.000	0.426	245.654	4898.775	-15.475	-58.188	-15.475	60.211	255.107	0.064
5000.000	0.560	251.604	4998.771	-15.782	-58.990	-15.782	61.065	255.022	0.144
5100.000	0.618	236.814	5098.766	-16.231	-59.905	-16.231	62.065	254.840	0.162
5200.000	0.433	250.020	5198.761	-16.655	-60.711	-16.655	62.954	254.659	0.220
5300.000	0.543	37.084	5298.760	-16.406	-60.781	-16.406	62.956	254.894	0.937
5400.000	1.788	35.868	5398.737	-14.764	-59.581	-14.764	61.383	256.083	1.245
5500.000	2.534	31.761	5498.665	-11.620	-57.503	-11.620	58.665	258.576	0.762
5600.000	2.610	33.723	5598.565	-7.846	-55.075	-7.846	55.631	261.892	0.116
5700.000	2.423	50.652	5698.470	-4.612	-52.176	-4.612	52.380	264.949	0.764
5800.000	2.631	48.782	5798.372	-1.760	-48.816	-1.760	48.847	267.935	0.224
5900.000	2.427	46.426	5898.275	1.212	-45.556	1.212	45.572	271.524	0.229
6000.000	1.729	37.544	5998.209	3.867	-43.103	3.867	43.276	275.127	0.767
6100.000	1.347	41.946	6098.173	5.937	-41.398	5.937	41.822	278.161	0.399
6200.000	0.729	47.730	6198.156	7.239	-40.142	7.239	40.789	280.223	0.626
6300.000	0.387	35.808	6298.151	7.941	-39.473	7.941	40.264	281.375	0.359
6400.000	0.284	355.810	6398.149	8.463	-39.293	8.463	40.194	282.154	0.249
6500.000	0.148	339.962	6498.149	8.832	-39.356	8.832	40.334	282.648	0.147
6600.000	0.298	288.815	6598.148	9.037	-39.646	9.037	40.663	282.841	0.235
6700.000	0.848	267.801	6698.143	9.092	-40.632	9.092	41.637	282.614	0.580
6800.000	0.764	226.825	6798.134	8.608	-41.858	8.608	42.734	281.620	0.570
6900.000	1.363	218.462	6898.116	7.220	-43.084	7.220	43.685	279.513	0.617
6980.000	1.102	198.986	6978.098	5.747	-43.926	5.747	44.300	277.454	0.612
HORIZONTAL DISPLACEMENT IS 44.300 FEET AT 277.454 DEGREES									