



Company: PDC Energy

Well: Becker 8

API: 05-123-25127

Rig Name: Production / V.E.S.

State/County: Colorado / Weld

Latitude: 40.258, 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: hgyro-de_01.ut

Minimum Curvature Method

Report Date/Time: 7/12/2014 / 15:32

Vaughn Energy Services

Henderson Colorado

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	1.846	188.160	99.983	-1.594	-0.229	-1.594	1.611	188.160	1.846
200.000	1.495	173.754	199.940	-4.486	-0.315	-4.486	4.497	184.021	0.545
300.000	1.160	185.583	299.914	-6.789	-0.272	-6.789	6.795	182.293	0.431
400.000	1.143	213.120	399.894	-8.632	-0.915	-8.632	8.680	186.053	0.548
500.000	0.753	239.216	499.881	-9.804	-2.025	-9.804	10.011	191.671	0.573
600.000	1.214	239.208	599.866	-10.683	-3.500	-10.683	11.241	198.139	0.461
700.000	0.703	242.637	699.852	-11.507	-4.954	-11.507	12.528	203.294	0.514
800.000	0.646	193.847	799.845	-12.336	-5.634	-12.336	13.562	204.546	0.559
900.000	0.217	214.604	899.842	-13.040	-5.877	-13.040	14.303	204.260	0.449
1000.000	0.484	169.886	999.841	-13.612	-5.910	-13.612	14.839	203.470	0.363
1100.000	0.368	126.774	1099.838	-14.220	-5.579	-14.220	15.275	201.421	0.331
1200.000	0.440	334.415	1199.837	-14.066	-5.487	-14.066	15.098	201.312	0.785
1300.000	0.284	101.790	1299.836	-13.770	-5.411	-13.770	14.795	201.453	0.653
1400.000	0.145	45.310	1399.835	-13.731	-5.079	-13.731	14.641	200.297	0.237
1500.000	0.161	255.423	1499.835	-13.678	-5.125	-13.678	14.606	200.540	0.295
1600.000	0.429	327.273	1599.834	-13.398	-5.463	-13.398	14.469	202.184	0.409
1700.000	0.366	283.379	1699.832	-13.009	-5.977	-13.009	14.316	204.675	0.303
1800.000	0.421	237.402	1799.830	-13.133	-6.597	-13.133	14.696	206.671	0.311
1900.000	0.547	276.959	1899.826	-13.273	-7.380	-13.273	15.186	209.075	0.348
2000.000	0.528	246.997	1999.822	-13.395	-8.278	-13.395	15.746	211.715	0.278
2100.000	0.475	249.742	2099.818	-13.718	-9.091	-13.718	16.457	213.531	0.058
2200.000	0.313	314.538	2199.816	-13.671	-9.674	-13.671	16.747	215.285	0.444
2300.000	0.450	331.431	2299.814	-13.135	-10.056	-13.135	16.542	217.439	0.176
2400.000	0.599	313.409	2399.810	-12.431	-10.624	-12.431	16.352	220.518	0.221
2500.000	0.794	345.995	2499.803	-11.399	-11.171	-11.399	15.960	224.420	0.433
2600.000	0.860	317.989	2599.793	-10.170	-11.841	-10.170	15.608	229.341	0.405
2700.000	1.007	320.385	2699.780	-8.936	-12.903	-8.936	15.695	235.295	0.152
2800.000	1.025	312.900	2799.764	-7.650	-14.118	-7.650	16.058	241.548	0.134
2900.000	0.960	327.894	2899.749	-6.332	-15.219	-6.332	16.483	247.410	0.267
3000.000	1.183	305.369	2999.732	-5.025	-16.505	-5.025	17.253	253.068	0.472
3100.000	0.932	302.776	3099.715	-3.987	-18.031	-3.987	18.466	257.531	0.255
3200.000	1.257	335.193	3199.698	-2.551	-19.175	-2.551	19.344	262.423	0.686
3300.000	1.466	327.267	3299.669	-0.479	-20.327	-0.479	20.333	268.651	0.280
3400.000	1.151	316.440	3399.643	1.325	-21.711	1.325	21.751	273.493	0.399

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	1.379	275.476	3499.621	2.168	-23.601	2.168	23.700	275.248	0.911
3600.000	1.480	297.919	3599.591	2.887	-25.940	2.887	26.100	276.351	0.565
3700.000	1.820	303.640	3699.549	4.372	-28.403	4.372	28.737	278.750	0.378
3800.000	2.091	276.812	3799.493	5.468	-31.536	5.468	32.007	279.836	0.945
3900.000	2.263	289.640	3899.421	6.348	-35.207	6.348	35.775	280.221	0.516
4000.000	2.498	287.115	3999.335	7.653	-39.149	7.653	39.890	281.061	0.257
4100.000	2.573	290.526	4099.237	9.081	-43.333	9.081	44.275	281.836	0.169
4200.000	2.768	287.403	4199.128	10.590	-47.739	10.590	48.900	282.507	0.244
4300.000	2.816	295.553	4299.010	12.372	-52.260	12.372	53.705	283.319	0.400
4400.000	3.308	294.258	4398.867	14.617	-57.107	14.617	58.948	284.357	0.496
4500.000	2.898	286.365	4498.721	16.514	-62.162	16.514	64.318	284.878	0.591
4600.000	2.922	291.560	4598.592	18.163	-66.958	18.163	69.377	285.177	0.265
4700.000	2.948	285.342	4698.461	19.780	-71.808	19.780	74.482	285.401	0.319
4800.000	2.896	280.648	4798.331	20.927	-76.771	20.927	79.572	285.248	0.245
4900.000	2.877	268.120	4898.205	21.312	-81.762	21.312	84.494	284.609	0.630
5000.000	2.989	276.767	4998.075	21.537	-86.859	21.537	89.490	283.926	0.456
5100.000	3.010	275.345	5097.938	22.089	-92.063	22.089	94.676	283.492	0.077
5200.000	2.967	270.735	5197.802	22.366	-97.265	22.366	99.803	282.950	0.244
5300.000	2.516	278.406	5297.687	22.720	-102.024	22.720	104.523	282.555	0.581
5400.000	2.211	261.977	5397.603	22.772	-106.106	22.772	108.522	282.113	0.739
5500.000	1.467	277.739	5497.552	22.675	-109.285	22.675	111.613	281.722	0.893
5600.000	1.518	279.533	5597.518	23.067	-111.860	23.067	114.213	281.652	0.069
5700.000	0.719	312.328	5697.499	23.709	-113.630	23.709	116.077	281.786	0.993
5800.000	0.875	319.919	5797.489	24.716	-114.586	24.716	117.221	282.172	0.188
5900.000	0.963	326.884	5897.476	26.004	-115.536	26.004	118.427	282.684	0.142
6000.000	1.320	300.812	5997.457	27.298	-116.985	27.298	120.128	283.135	0.622
6100.000	1.026	311.682	6097.436	28.484	-118.644	28.484	122.015	283.500	0.368
6200.000	1.283	270.301	6197.417	29.085	-120.432	29.085	123.895	283.577	0.851
6300.000	1.370	261.281	6297.391	28.910	-122.734	28.910	126.093	283.254	0.226
6400.000	1.946	250.814	6397.349	28.171	-125.519	28.171	128.642	282.649	0.649
6500.000	1.919	249.942	6497.292	27.038	-128.696	27.038	131.506	281.865	0.040
6600.000	2.756	243.642	6597.208	25.396	-132.424	25.396	134.837	280.856	0.874
6650.000	2.427	236.248	6647.157	24.274	-134.381	24.274	136.556	280.239	0.936
HORIZONTAL DISPLACEMENT IS 136.556 FEET AT 280.239 DEGREES									