



Company: PDC Energy

Well: BJB 5

API: 05-123-22828

Rig Name: Production / V.E.S.

State/County: Colorado / Weld

Latitude: 40.432, Longitude: -104.606

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: 8/7/2014 / 12:16

VES Survey International

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	0.198	112.950	100.000	-0.067	0.159	-0.067	0.173	112.950	0.198
200.000	0.113	36.519	200.000	-0.055	0.377	-0.055	0.381	98.326	0.204
300.000	0.140	125.296	299.999	-0.046	0.536	-0.046	0.538	94.947	0.178
400.000	0.262	224.035	399.999	-0.281	0.476	-0.281	0.553	120.573	0.315
500.000	0.353	295.838	499.998	-0.311	0.040	-0.311	0.314	172.698	0.368
600.000	0.224	303.473	599.997	-0.069	-0.401	-0.069	0.407	260.182	0.135
700.000	0.274	313.116	699.996	0.202	-0.738	0.202	0.765	285.287	0.065
800.000	0.159	255.188	799.995	0.330	-1.046	0.330	1.097	287.480	0.232
900.000	0.385	283.579	899.994	0.373	-1.507	0.373	1.553	283.900	0.257
1000.000	0.262	304.990	999.992	0.583	-2.022	0.583	2.104	286.089	0.171
1100.000	0.307	280.228	1099.991	0.762	-2.472	0.762	2.587	287.124	0.129
1200.000	0.350	252.123	1199.989	0.716	-3.026	0.716	3.109	283.304	0.165
1300.000	0.267	266.553	1299.988	0.608	-3.549	0.608	3.600	279.720	0.113
1400.000	0.188	276.617	1399.987	0.613	-3.944	0.613	3.991	278.832	0.088
1500.000	0.163	239.838	1499.987	0.560	-4.230	0.560	4.267	277.543	0.113
1600.000	0.095	226.204	1599.987	0.431	-4.413	0.431	4.434	275.576	0.074
1700.000	0.162	112.888	1699.986	0.318	-4.343	0.318	4.354	274.190	0.219
1800.000	0.996	48.330	1799.981	0.841	-3.563	0.841	3.661	283.276	0.937
1900.000	1.275	41.219	1899.961	2.255	-2.181	2.255	3.137	315.958	0.312
2000.000	1.439	27.197	1999.933	4.208	-0.874	4.208	4.298	348.266	0.369
2100.000	1.605	29.948	2099.898	6.538	0.399	6.538	6.550	3.489	0.181
2200.000	1.203	56.814	2199.869	8.326	1.976	8.326	8.557	13.351	0.760
2300.000	0.908	106.355	2299.854	8.677	3.615	8.677	9.400	22.617	0.924
2400.000	1.767	128.639	2399.826	7.491	5.580	7.491	9.341	36.679	0.988
2500.000	2.369	146.101	2499.762	4.813	7.936	4.813	9.282	58.764	0.865
2600.000	2.465	160.117	2599.673	1.075	9.821	1.075	9.879	83.752	0.597
2700.000	2.391	166.593	2699.584	-2.976	11.036	-2.976	11.430	105.094	0.284
2800.000	2.262	174.682	2799.502	-6.971	11.702	-6.971	13.621	120.781	0.352
2900.000	2.070	180.337	2899.430	-10.741	11.875	-10.741	16.012	132.131	0.287
3000.000	1.534	180.167	2999.381	-13.885	11.860	-13.885	18.261	139.498	0.536
3100.000	1.198	193.867	3099.352	-16.238	11.606	-16.238	19.959	144.446	0.466
3200.000	0.870	187.966	3199.336	-18.005	11.250	-18.005	21.230	148.001	0.345
3300.000	0.038	13.360	3299.332	-18.724	11.152	-18.724	21.794	149.221	0.907
3400.000	0.994	19.224	3399.327	-17.873	11.446	-17.873	21.224	147.365	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	1.204	26.055	3499.309	-16.110	12.193	-16.110	20.204	142.880	0.247
3600.000	1.214	18.170	3599.286	-14.160	12.985	-14.160	19.212	137.478	0.167
3700.000	1.341	22.482	3699.262	-12.072	13.762	-12.072	18.307	131.256	0.159
3800.000	1.186	20.152	3799.237	-10.020	14.566	-10.020	17.680	124.523	0.163
3900.000	1.265	20.423	3899.214	-8.014	15.308	-8.014	17.279	117.631	0.080
4000.000	1.154	11.170	3999.192	-5.991	15.888	-5.991	16.980	110.660	0.225
4100.000	1.313	14.596	4099.169	-3.895	16.372	-3.895	16.829	103.381	0.176
4200.000	1.355	7.591	4199.142	-1.614	16.817	-1.614	16.894	95.482	0.168
4300.000	1.536	7.760	4299.110	0.886	17.154	0.886	17.177	87.043	0.182
4400.000	1.815	25.795	4399.068	3.641	18.025	3.641	18.389	78.580	0.593
4500.000	1.816	24.728	4499.018	6.506	19.377	6.506	20.440	71.440	0.034
4600.000	1.682	45.157	4598.972	8.980	21.080	8.980	22.913	66.926	0.634
4700.000	1.235	60.213	4698.940	10.550	23.055	10.550	25.354	65.412	0.585
4800.000	0.864	67.249	4798.923	11.377	24.686	11.377	27.181	65.257	0.392
4900.000	0.569	86.103	4898.915	11.702	25.877	11.702	28.400	65.667	0.374
5000.000	0.596	80.515	4998.910	11.822	26.886	11.822	29.370	66.265	0.063
5100.000	0.572	110.842	5098.905	11.730	27.866	11.730	30.234	67.172	0.306
5200.000	0.750	131.466	5198.898	11.119	28.823	11.119	30.893	68.904	0.294
5300.000	1.144	136.507	5298.885	9.962	30.000	9.962	31.610	71.630	0.402
5400.000	1.663	130.651	5398.854	8.293	31.788	8.293	32.851	75.379	0.539
5500.000	1.884	124.633	5498.806	6.413	34.241	6.413	34.837	79.392	0.289
5600.000	1.734	125.440	5598.756	4.601	36.827	4.601	37.113	82.878	0.152
5700.000	1.684	123.607	5698.712	2.910	39.284	2.910	39.391	85.763	0.074
5800.000	1.498	106.166	5798.674	1.733	41.763	1.733	41.799	87.624	0.516
5900.000	1.606	116.750	5898.637	0.738	44.270	0.738	44.276	89.045	0.306
6000.000	1.702	110.384	5998.596	-0.410	46.913	-0.410	46.915	90.500	0.207
6100.000	1.767	111.177	6098.550	-1.484	49.743	-1.484	49.765	91.709	0.070
6200.000	1.460	101.364	6198.510	-2.292	52.430	-2.292	52.480	92.503	0.412
6300.000	1.390	100.592	6298.480	-2.766	54.870	-2.766	54.940	92.886	0.073
6400.000	1.199	93.188	6398.454	-3.047	57.107	-3.047	57.188	93.054	0.253
6500.000	1.084	80.372	6498.434	-2.947	59.084	-2.947	59.158	92.855	0.279
6550.000	0.858	88.144	6548.427	-2.856	59.925	-2.856	59.993	92.728	0.523
HORIZONTAL DISPLACEMENT IS 59.993 FEET AT 92.728 DEGREES									