



Company: PDC Energy

Well: Becker 5-16

API: 05-123-18181

Rig Name: Production / V.E.S.

State/County: Colorado / Weld

Latitude: 40.253, Longitude: -104.568

Directions are relative to True North

VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB = Ground Level

DRILLOG GYRO SURVEY CALCULATIONS

Filename: survey.ut

Minimum Curvature Method

Report Date/Time: 7/17/2014 / 19:28

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	0.150	89.772	100.000	0.001	0.131	0.001	0.131	89.772	0.150
200.000	0.373	124.141	199.999	-0.182	0.531	-0.182	0.561	108.903	0.264
300.000	0.101	140.778	299.998	-0.433	0.856	-0.433	0.959	116.832	0.277
400.000	0.326	96.180	399.997	-0.532	1.195	-0.532	1.308	114.014	0.263
500.000	0.451	60.567	499.995	-0.370	1.820	-0.370	1.857	101.479	0.266
600.000	0.570	63.474	599.991	0.046	2.608	0.046	2.608	88.988	0.122
700.000	0.680	64.436	699.985	0.524	3.588	0.524	3.626	81.686	0.110
800.000	0.421	57.793	799.980	0.976	4.434	0.976	4.540	77.587	0.266
900.000	0.543	31.322	899.977	1.576	4.991	1.576	5.233	72.474	0.250
1000.000	0.736	46.503	999.971	2.423	5.703	2.423	6.196	66.983	0.256
1100.000	0.492	75.528	1099.965	2.972	6.584	2.972	7.224	65.706	0.388
1200.000	0.494	86.245	1199.961	3.107	7.429	3.107	8.053	67.302	0.092
1300.000	0.241	88.561	1299.959	3.141	8.069	3.141	8.659	68.732	0.253
1400.000	0.196	328.072	1399.959	3.291	8.189	3.291	8.826	68.104	0.380
1500.000	0.251	196.842	1499.959	3.226	8.035	3.226	8.659	68.124	0.408
1600.000	0.237	242.763	1599.958	2.922	7.788	2.922	8.318	69.436	0.191
1700.000	0.148	243.921	1699.957	2.770	7.488	2.770	7.984	69.697	0.088
1800.000	0.208	191.716	1799.957	2.536	7.336	2.536	7.762	70.927	0.165
1900.000	0.610	192.242	1899.954	1.839	7.186	1.839	7.417	75.648	0.403
2000.000	0.046	238.018	1999.952	1.297	7.038	1.297	7.157	79.562	0.579
2100.000	0.552	284.933	2099.950	1.399	6.539	1.399	6.687	77.922	0.521
2200.000	0.166	223.193	2199.949	1.418	5.975	1.418	6.141	76.653	0.495
2300.000	0.218	20.966	2299.948	1.489	5.944	1.489	6.127	75.932	0.377
2400.000	0.694	11.191	2399.945	2.261	6.129	2.261	6.533	69.749	0.481
2500.000	0.590	0.205	2499.939	3.370	6.249	3.370	7.100	61.659	0.161
2600.000	0.518	0.446	2599.934	4.337	6.254	4.337	7.610	55.262	0.072
2700.000	0.691	332.865	2699.929	5.325	5.982	5.325	8.009	48.327	0.334
2800.000	0.497	15.579	2799.924	6.280	5.824	6.280	8.565	42.844	0.469
2900.000	0.202	323.015	2899.922	6.839	5.834	6.839	8.989	40.469	0.407
3000.000	0.760	349.916	2999.918	7.632	5.612	7.632	9.474	36.327	0.587
3100.000	0.342	19.633	3099.913	8.566	5.596	8.566	10.233	33.157	0.492
3200.000	0.749	28.224	3199.909	9.424	6.006	9.424	11.175	32.510	0.414
3300.000	0.789	26.897	3299.900	10.614	6.627	10.614	12.513	31.978	0.044
3400.000	1.269	342.504	3399.885	12.284	6.606	12.284	13.948	28.268	0.895

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	2.189	333.426	3499.838	15.048	5.419	15.048	15.994	19.803	0.957
3600.000	3.008	332.145	3599.735	19.075	3.338	19.075	19.365	9.927	0.821
3700.000	3.923	335.013	3699.551	24.496	0.667	24.496	24.505	1.561	0.932
3800.000	4.658	335.857	3799.270	31.302	-2.438	31.302	31.397	355.546	0.737
3900.000	4.392	335.276	3898.958	38.486	-5.701	38.486	38.905	351.574	0.270
4000.000	4.785	334.554	3998.637	45.730	-9.094	45.730	46.625	348.752	0.397
4100.000	4.097	330.844	4098.337	52.616	-12.627	52.616	54.110	346.505	0.745
4200.000	3.658	328.827	4198.107	58.466	-16.019	58.466	60.620	344.678	0.460
4300.000	3.929	335.538	4297.889	64.313	-19.089	64.313	67.087	343.469	0.519
4400.000	3.466	328.088	4397.681	69.998	-22.105	69.998	73.405	342.474	0.666
4500.000	3.120	332.014	4497.516	74.967	-24.980	74.967	79.019	341.571	0.413
4600.000	2.529	329.994	4597.394	79.280	-27.360	79.280	83.868	340.960	0.599
4700.000	2.058	339.954	4697.314	82.877	-29.079	82.877	87.830	340.666	0.615
4800.000	1.538	323.600	4797.265	85.644	-30.491	85.644	90.910	340.403	0.726
4900.000	1.733	331.951	4897.224	88.058	-31.998	88.058	93.692	340.030	0.307
5000.000	1.475	312.557	4997.186	90.263	-33.657	90.263	96.334	339.551	0.597
5100.000	1.446	331.942	5097.154	92.247	-35.198	92.247	98.734	339.115	0.492
5200.000	0.648	6.678	5197.137	93.922	-35.726	93.922	100.487	339.174	0.985
5300.000	0.607	24.685	5297.131	94.965	-35.439	94.965	101.362	339.535	0.201
5400.000	0.629	68.158	5397.126	95.650	-34.708	95.650	101.753	340.056	0.458
5500.000	0.259	154.528	5497.124	95.650	-34.101	95.650	101.547	340.378	0.665
5600.000	0.261	134.444	5597.123	95.286	-33.841	95.286	101.117	340.447	0.091
5700.000	0.208	60.615	5697.122	95.215	-33.520	95.215	100.943	340.606	0.285
5800.000	0.586	94.568	5797.120	95.263	-32.853	95.263	100.769	340.973	0.429
5900.000	0.524	25.929	5897.116	95.634	-32.143	95.634	100.891	341.422	0.628
6000.000	0.269	60.687	5997.114	96.161	-31.739	96.161	101.263	341.734	0.340
6100.000	0.479	69.436	6097.111	96.422	-31.142	96.422	101.327	342.101	0.218
6200.000	0.825	88.295	6197.105	96.591	-30.031	96.591	101.151	342.729	0.403
6300.000	0.624	78.901	6297.097	96.717	-28.776	96.717	100.907	343.431	0.233
6400.000	0.975	42.190	6397.088	97.452	-27.670	97.452	101.304	344.149	0.604
6500.000	1.519	57.277	6497.064	98.799	-25.983	98.799	102.159	345.265	0.631
6600.000	1.855	49.402	6597.020	100.569	-23.639	100.569	103.310	346.772	0.408
6700.000	1.643	77.201	6696.976	101.940	-21.013	101.940	104.083	348.353	0.865
6800.000	1.488	111.296	6796.940	101.786	-18.405	101.786	103.437	349.750	0.930
6850.000	1.306	127.094	6846.926	101.207	-17.346	101.207	102.682	350.275	0.848

HORIZONTAL DISPLACEMENT IS  
102.682 FEET AT 350.275 DEGREES