



Company: PDC Energy
Well: Bond 32-9
API: 05-123-19462
Rig Name: Production/ VES
State/County: Colorado/Weld
Latitude: 40.416, Longitude: -104.553
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: 11/20/2014 / 22:09

VES 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	0.637	115.998	99.998	-0.244	0.500	-0.244	0.556	115.998	0.637
200.000	0.059	255.184	199.996	-0.501	0.949	-0.501	1.073	117.805	0.683
300.000	0.262	158.929	299.996	-0.727	0.981	-0.727	1.221	126.525	0.274
400.000	0.660	60.146	399.993	-0.653	1.563	-0.653	1.694	112.677	0.746
500.000	0.127	330.073	499.991	-0.270	2.007	-0.270	2.025	97.667	0.672
600.000	0.585	119.316	599.989	-0.424	2.397	-0.424	2.434	100.031	0.697
700.000	0.026	13.891	699.988	-0.652	2.847	-0.652	2.921	102.903	0.592
800.000	0.718	87.158	799.985	-0.600	3.479	-0.600	3.530	99.779	0.711
900.000	0.493	90.495	899.979	-0.572	4.535	-0.572	4.571	97.191	0.228
1000.000	0.316	141.464	999.977	-0.791	5.137	-0.791	5.198	98.757	0.383
1100.000	0.515	330.390	1099.976	-0.616	5.087	-0.616	5.124	96.908	0.828
1200.000	0.324	347.433	1199.973	0.050	4.803	0.050	4.803	89.399	0.226
1300.000	0.399	230.805	1299.972	0.106	4.471	0.106	4.473	88.639	0.617
1400.000	0.087	255.352	1399.971	-0.133	4.128	-0.133	4.130	91.850	0.322
1500.000	0.354	101.046	1499.971	-0.212	4.357	-0.212	4.362	92.781	0.434
1600.000	1.073	143.275	1599.963	-1.021	5.220	-1.021	5.319	101.071	0.845
1700.000	0.496	149.823	1699.953	-2.146	5.998	-2.146	6.370	109.690	0.583
1800.000	0.501	68.620	1799.950	-2.361	6.622	-2.361	7.030	109.626	0.649
1900.000	0.320	57.610	1899.948	-2.053	7.264	-2.053	7.549	105.778	0.197
2000.000	0.893	100.482	1999.942	-2.045	8.266	-2.045	8.516	103.895	0.694
2100.000	0.627	143.944	2099.934	-2.629	9.355	-2.629	9.717	105.696	0.615
2200.000	0.416	272.814	2199.932	-3.053	9.314	-3.053	9.801	108.149	0.945
2300.000	0.240	359.079	2299.931	-2.826	8.947	-2.826	9.383	107.530	0.467
2400.000	0.435	271.074	2399.930	-2.610	8.565	-2.610	8.954	106.948	0.489
2500.000	0.546	256.919	2499.926	-2.711	7.721	-2.711	8.183	109.346	0.164
2600.000	0.615	333.802	2599.922	-2.337	7.020	-2.337	7.398	108.415	0.724
2700.000	0.558	286.124	2699.917	-1.720	6.315	-1.720	6.545	105.239	0.477
2800.000	0.531	342.077	2799.914	-1.144	5.705	-1.144	5.818	101.340	0.511
2900.000	0.432	275.894	2899.911	-0.664	5.187	-0.664	5.229	97.298	0.532
3000.000	0.804	12.856	2999.907	0.059	4.968	0.059	4.969	89.324	0.958
3100.000	0.223	296.651	3099.903	0.830	4.950	0.830	5.020	80.480	0.782
3200.000	0.702	23.076	3199.900	1.481	5.016	1.481	5.230	73.551	0.723
3300.000	0.387	102.210	3299.897	1.973	5.587	1.973	5.925	70.548	0.735
3400.000	0.359	36.453	3399.895	2.154	6.103	2.154	6.472	70.564	0.406
3500.000	0.506	342.517	3499.892	2.827	6.157	2.827	6.775	65.337	0.414

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	0.185	190.256	3599.891	3.090	5.995	3.090	6.745	62.736	0.675
3700.000	0.532	260.352	3699.890	2.853	5.509	2.853	6.204	62.621	0.500
3800.000	0.121	328.181	3799.888	2.865	4.997	2.865	5.760	60.170	0.499
3900.000	0.609	171.933	3899.886	2.428	5.016	2.428	5.572	64.167	0.721
4000.000	1.539	157.018	3999.868	0.665	5.615	0.665	5.654	83.242	0.964
4100.000	2.411	150.216	4099.808	-2.397	7.184	-2.397	7.573	108.451	0.901
4200.000	2.689	145.801	4199.709	-6.162	9.547	-6.162	11.363	122.841	0.341
4300.000	2.537	157.208	4299.605	-10.144	11.723	-10.144	15.502	130.868	0.541
4400.000	2.345	158.636	4399.514	-14.089	13.326	-14.089	19.393	136.595	0.202
4500.000	1.616	149.477	4499.454	-17.210	14.788	-17.210	22.690	139.329	0.792
4600.000	1.549	135.274	4599.417	-19.385	16.455	-19.385	25.427	139.673	0.397
4700.000	1.736	154.276	4699.376	-21.709	18.064	-21.709	28.242	140.237	0.572
4800.000	1.020	153.241	4799.347	-23.869	19.122	-23.869	30.584	141.301	0.715
4900.000	0.801	176.237	4899.334	-25.361	19.569	-25.361	32.033	142.346	0.422
5000.000	0.794	124.313	4999.326	-26.449	20.186	-26.449	33.272	142.648	0.698
5100.000	0.473	111.330	5099.320	-26.989	21.143	-26.989	34.285	141.926	0.349
5200.000	0.364	61.037	5199.317	-26.986	21.805	-26.986	34.694	141.061	0.369
5300.000	0.469	45.918	5299.315	-26.548	22.376	-26.548	34.720	139.873	0.151
5400.000	0.704	23.084	5399.309	-25.698	22.911	-25.698	34.428	138.281	0.327
5500.000	0.982	27.366	5499.299	-24.372	23.546	-24.372	33.888	135.988	0.285
5600.000	0.886	70.644	5599.286	-23.354	24.670	-23.354	33.971	133.431	0.695
5700.000	0.510	34.555	5699.279	-22.732	25.652	-22.732	34.274	131.546	0.562
5800.000	0.937	74.879	5799.272	-22.152	26.693	-22.152	34.688	129.689	0.640
5900.000	0.476	6.865	5899.265	-21.526	27.532	-21.526	34.949	128.021	0.878
6000.000	0.567	47.636	5999.261	-20.781	27.947	-20.781	34.827	126.633	0.373
6100.000	0.616	7.972	6099.256	-19.915	28.387	-19.915	34.676	125.052	0.404
6200.000	0.542	84.901	6199.253	-19.341	28.933	-19.341	34.802	123.762	0.722
6300.000	0.102	190.397	6299.251	-19.387	29.388	-19.387	35.207	123.412	0.578
6400.000	0.396	104.775	6399.250	-19.563	29.706	-19.563	35.569	123.367	0.401
6500.000	0.160	294.572	6499.250	-19.593	29.913	-19.593	35.758	123.225	0.554
6600.000	0.323	165.021	6599.249	-19.807	29.859	-19.807	35.831	123.558	0.442

HORIZONTAL DISPLACEMENT IS
35.831 FEET AT 123.558 DEGREES