



Company: PDC Energy  
Well: Latham 7-4  
API: 05-123-19390  
Rig Name: Production/ VES  
State/County: Colorado/Weld  
Latitude: 40.321, Longitude: -104.596  
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: 12/24/2014 / 16:36

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	0.355	240.293	99.999	-0.153	-0.269	-0.153	0.309	240.293	0.355
200.000	0.368	196.834	199.998	-0.614	-0.630	-0.614	0.880	225.769	0.268
300.000	0.148	280.054	299.997	-0.898	-0.850	-0.898	1.237	223.425	0.380
400.000	0.186	180.818	399.996	-1.038	-0.979	-1.038	1.427	223.340	0.255
500.000	0.157	7.803	499.996	-1.064	-0.963	-1.064	1.435	222.146	0.342
600.000	0.304	188.181	599.996	-1.191	-0.982	-1.191	1.544	219.511	0.461
700.000	0.256	265.849	699.995	-1.470	-1.243	-1.470	1.925	220.221	0.353
800.000	0.243	201.405	799.994	-1.683	-1.543	-1.683	2.284	222.520	0.266
900.000	0.257	224.330	899.993	-2.041	-1.778	-2.041	2.707	221.055	0.100
1000.000	0.122	231.380	999.993	-2.268	-2.018	-2.268	3.035	221.657	0.137
1100.000	0.340	169.228	1099.992	-2.625	-2.045	-2.625	3.328	217.918	0.303
1200.000	0.577	182.433	1199.989	-3.419	-2.011	-3.419	3.967	210.462	0.258
1300.000	0.302	200.547	1299.986	-4.169	-2.125	-4.169	4.680	207.009	0.304
1400.000	0.423	190.348	1399.984	-4.780	-2.284	-4.780	5.298	205.542	0.137
1500.000	0.520	169.141	1499.980	-5.589	-2.265	-5.589	6.031	202.060	0.198
1600.000	0.556	179.178	1599.976	-6.521	-2.172	-6.521	6.873	198.426	0.101
1700.000	0.649	210.107	1699.971	-7.496	-2.449	-7.496	7.886	198.096	0.333
1800.000	0.733	227.617	1799.964	-8.416	-3.206	-8.416	9.006	200.851	0.226
1900.000	0.628	271.622	1899.957	-8.832	-4.226	-8.832	9.791	205.570	0.519
2000.000	0.694	284.218	1999.951	-8.668	-5.361	-8.668	10.191	211.735	0.159
2100.000	1.129	301.413	2099.938	-8.006	-6.788	-8.006	10.496	220.295	0.509
2200.000	1.676	310.991	2199.908	-6.533	-8.733	-6.533	10.906	233.199	0.594
2300.000	2.056	337.336	2299.856	-3.919	-10.528	-3.919	11.233	249.583	0.927
2400.000	2.054	338.229	2399.792	-0.600	-11.883	-0.600	11.898	267.111	0.032
2500.000	2.275	320.318	2499.722	2.592	-13.815	2.592	14.056	280.626	0.708
2600.000	2.163	325.877	2599.647	5.681	-16.141	5.681	17.112	289.391	0.243
2700.000	1.894	317.036	2699.584	8.453	-18.326	8.453	20.182	294.762	0.411
2800.000	2.090	315.794	2799.524	10.970	-20.724	10.970	23.448	297.893	0.200
2900.000	1.983	296.279	2899.462	13.043	-23.547	13.043	26.918	298.983	0.698
3000.000	1.835	304.708	2999.407	14.721	-26.414	14.721	30.239	299.131	0.317
3100.000	1.816	306.922	3099.356	16.584	-28.998	16.584	33.405	299.766	0.073
3200.000	1.827	305.603	3199.305	18.464	-31.561	18.464	36.565	300.329	0.043
3300.000	1.543	311.273	3299.262	20.280	-33.869	20.280	39.476	300.913	0.329
3400.000	1.368	337.331	3399.231	22.270	-35.340	22.270	41.772	302.217	0.678
3500.000	1.141	350.713	3499.207	24.353	-35.961	24.353	43.431	304.107	0.369

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	1.037	32.872	3599.191	26.096	-35.630	26.096	44.165	306.219	0.789
3700.000	1.082	16.159	3699.174	27.763	-34.876	27.763	44.577	308.521	0.311
3800.000	0.470	322.381	3799.165	28.995	-34.864	28.995	45.345	309.749	0.889
3900.000	0.661	342.987	3899.160	29.871	-35.283	29.871	46.229	310.252	0.277
4000.000	0.640	338.981	3999.154	30.944	-35.652	30.944	47.208	310.956	0.050
4100.000	0.581	300.339	4099.149	31.721	-36.290	31.721	48.199	311.157	0.408
4200.000	0.631	334.831	4199.143	32.475	-36.961	32.475	49.201	311.304	0.362
4300.000	0.557	296.304	4299.138	33.189	-37.631	33.189	50.176	311.411	0.398
4400.000	0.760	349.529	4399.132	34.057	-38.188	34.057	51.168	311.727	0.617
4500.000	1.291	325.615	4499.117	35.638	-38.945	35.638	52.790	312.462	0.671
4600.000	1.664	308.654	4599.084	37.475	-40.715	37.475	55.336	312.627	0.571
4700.000	1.245	308.077	4699.051	39.052	-42.704	39.052	57.868	312.442	0.420
4800.000	1.354	323.458	4799.026	40.671	-44.263	40.671	60.111	312.579	0.364
4900.000	1.183	295.416	4899.002	42.063	-45.899	42.063	62.258	312.503	0.637
5000.000	1.189	265.548	4998.982	42.426	-47.865	42.426	63.961	311.553	0.611
5100.000	1.127	274.672	5098.961	42.425	-49.879	42.425	65.482	310.383	0.194
5200.000	0.920	236.560	5198.946	42.063	-51.529	42.063	66.517	309.225	0.696
5300.000	1.237	213.262	5298.929	40.718	-52.791	40.718	66.670	307.643	0.535
5400.000	1.539	193.822	5398.900	38.512	-53.704	38.512	66.085	305.645	0.555
5500.000	1.600	167.541	5498.864	35.845	-53.724	35.845	64.584	303.712	0.716
5600.000	1.635	155.922	5598.824	33.180	-52.841	33.180	62.394	302.125	0.329
5700.000	1.185	158.219	5698.794	30.917	-51.875	30.917	60.389	300.795	0.454
5800.000	1.056	159.971	5798.775	29.092	-51.176	29.092	58.867	299.617	0.133
5900.000	1.152	130.730	5898.757	27.570	-50.098	27.570	57.183	298.825	0.565
6000.000	1.192	111.361	5998.736	26.535	-48.367	26.535	55.168	298.750	0.396
6100.000	1.519	140.245	6098.709	25.137	-46.551	25.137	52.904	298.369	0.747
6200.000	1.655	120.630	6198.672	23.382	-44.460	23.382	50.234	297.740	0.557
6300.000	1.457	89.859	6298.637	22.649	-41.945	22.649	47.670	298.368	0.848
6400.000	1.653	114.049	6398.601	22.064	-39.356	22.064	45.119	299.276	0.679
6500.000	1.663	102.087	6498.559	21.173	-36.620	21.173	42.300	300.035	0.346
6600.000	1.608	94.164	6598.519	20.767	-33.802	20.767	39.672	301.565	0.232
6700.000	1.676	114.766	6698.478	20.052	-31.075	20.052	36.983	302.834	0.591
6800.000	2.016	114.316	6798.426	18.715	-28.144	18.715	33.799	303.623	0.339
6900.000	1.554	116.377	6898.378	17.389	-25.326	17.389	30.721	304.473	0.465
7000.000	1.528	97.259	6998.342	16.618	-22.789	16.618	28.204	306.100	0.512
7100.000	1.724	77.673	7098.302	16.770	-19.997	16.770	26.098	309.985	0.586

HORIZONTAL DISPLACEMENT IS  
26.098 FEET AT 309.985 DEGREES