



Company: PDC Energy
Well: Hendricks 33-4
API: 05-123-19407
Rig Name: Production/ VES
State/County: Colorado/Weld
Latitude: 40.358, Longitude: -104.552
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: survey1_mrg.ut
Minimum Curvature Method
Report Date/Time: 4/28/2014 / 13:46

Vaughn Energy Services
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	0.488	337.646	99.999	0.394	-0.162	0.394	0.426	337.646	0.488
200.000	0.475	327.242	199.995	1.137	-0.549	1.137	1.263	334.246	0.088
300.000	0.257	170.656	299.994	1.264	-0.736	1.264	1.463	329.778	0.718
400.000	0.549	217.424	399.992	0.662	-0.991	0.662	1.192	303.746	0.417
500.000	0.781	239.475	499.985	-0.065	-1.870	-0.065	1.871	268.020	0.342
600.000	0.726	238.935	599.977	-0.738	-3.000	-0.738	3.089	256.182	0.056
700.000	0.725	243.580	699.969	-1.346	-4.109	-1.346	4.324	251.859	0.059
800.000	0.611	218.826	799.962	-2.043	-5.010	-2.043	5.411	247.813	0.307
900.000	0.601	232.525	899.957	-2.778	-5.761	-2.778	6.396	244.257	0.145
1000.000	0.659	254.888	999.951	-3.247	-6.733	-3.247	7.475	244.252	0.251
1100.000	0.885	241.063	1099.942	-3.771	-7.963	-3.771	8.811	244.663	0.291
1200.000	0.839	241.809	1199.930	-4.490	-9.284	-4.490	10.313	244.191	0.047
1300.000	0.594	255.486	1299.922	-4.966	-10.432	-4.966	11.554	244.543	0.298
1400.000	0.709	231.125	1399.916	-5.484	-11.415	-5.484	12.664	244.339	0.297
1500.000	0.763	248.913	1499.908	-6.112	-12.518	-6.112	13.930	243.976	0.234
1600.000	0.613	247.765	1599.901	-6.554	-13.634	-6.554	15.127	244.327	0.150
1700.000	0.715	239.073	1699.894	-7.077	-14.665	-7.077	16.283	244.238	0.143
1800.000	0.623	209.931	1799.888	-7.869	-15.471	-7.869	17.357	243.042	0.348
1900.000	0.780	206.846	1899.880	-8.947	-16.050	-8.947	18.375	240.862	0.162
2000.000	0.896	212.024	1999.869	-10.217	-16.772	-10.217	19.639	238.650	0.138
2100.000	0.932	211.835	2099.857	-11.571	-17.615	-11.571	21.076	236.700	0.036
2200.000	1.010	202.310	2199.842	-13.077	-18.379	-13.077	22.556	234.567	0.179
2300.000	1.345	204.906	2299.821	-14.957	-19.208	-14.957	24.344	232.092	0.339
2400.000	1.456	210.496	2399.791	-17.116	-20.346	-17.116	26.588	229.929	0.176
2500.000	1.482	228.102	2499.759	-19.073	-21.953	-19.073	29.082	229.015	0.450
2600.000	1.433	201.967	2599.728	-21.096	-23.383	-21.096	31.493	227.944	0.661
2700.000	1.714	207.256	2699.690	-23.585	-24.536	-23.585	34.033	226.132	0.316
2800.000	1.684	218.582	2799.646	-26.062	-26.136	-26.062	36.910	225.082	0.336
2900.000	1.619	225.499	2899.605	-28.200	-28.060	-28.200	39.782	224.857	0.209
3000.000	1.538	236.726	2999.567	-29.926	-30.189	-29.926	42.509	225.250	0.319
3100.000	1.404	246.836	3099.534	-31.145	-32.438	-31.145	44.969	226.165	0.291
3200.000	1.192	247.627	3199.509	-32.023	-34.526	-32.023	47.091	227.154	0.214
3300.000	0.367	296.796	3299.499	-32.274	-35.774	-32.274	48.181	227.944	0.991
3400.000	0.507	13.886	3399.497	-31.700	-35.953	-31.700	47.933	228.598	0.556
3500.000	0.269	84.925	3499.495	-31.249	-35.614	-31.249	47.380	228.735	0.491

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	0.470	43.445	3599.493	-30.931	-35.098	-30.931	46.782	228.611	0.323
3700.000	0.712	87.189	3699.488	-30.602	-34.195	-30.602	45.889	228.174	0.495
3800.000	0.643	81.948	3799.481	-30.493	-33.019	-30.493	44.945	227.277	0.093
3900.000	0.498	97.273	3899.476	-30.470	-32.033	-30.470	44.210	226.433	0.209
4000.000	0.639	59.747	3999.472	-30.244	-31.120	-30.244	43.395	225.818	0.389
4100.000	0.771	7.329	4099.465	-29.296	-30.553	-29.296	42.328	226.203	0.634
4200.000	0.920	19.357	4199.454	-27.871	-30.201	-27.871	41.096	227.297	0.231
4300.000	1.113	20.988	4299.439	-26.207	-29.587	-26.207	39.525	228.466	0.195
4400.000	1.577	47.904	4399.412	-24.378	-28.218	-24.378	37.290	229.175	0.772
4500.000	1.952	30.812	4499.365	-21.992	-26.324	-21.992	34.302	230.123	0.642
4600.000	2.684	40.655	4599.283	-18.753	-23.926	-18.753	30.400	231.911	0.830
4700.000	3.107	55.477	4699.156	-15.441	-20.168	-15.441	25.400	232.561	0.857
4800.000	3.665	65.516	4798.982	-12.580	-15.026	-12.580	19.597	230.062	0.812
4900.000	3.927	62.777	4898.763	-9.689	-9.072	-9.689	13.273	223.115	0.319
5000.000	3.774	60.157	4998.537	-6.485	-3.172	-6.485	7.219	206.064	0.233
5100.000	2.810	57.210	5098.371	-3.519	1.744	-3.519	3.928	153.641	0.978
5200.000	2.030	51.787	5198.281	-1.096	5.196	-1.096	5.311	101.914	0.813
5300.000	1.455	37.209	5298.235	1.010	7.356	1.010	7.425	82.179	0.721
5400.000	0.586	27.716	5398.218	2.474	8.361	2.474	8.720	73.515	0.883
5500.000	0.578	347.131	5498.213	3.419	8.487	3.419	9.149	68.056	0.404
5600.000	0.488	286.897	5598.210	4.035	7.966	4.035	8.930	63.137	0.541
5700.000	1.384	274.852	5698.195	4.261	6.355	4.261	7.652	56.159	0.912
5800.000	1.367	313.925	5798.169	5.191	4.293	5.191	6.736	39.595	0.920
5900.000	1.629	341.347	5898.136	7.364	2.980	7.364	7.944	22.030	0.754
6000.000	2.095	333.177	5998.083	10.342	1.700	10.342	10.481	9.337	0.536
6100.000	1.489	310.834	6098.035	12.823	-0.107	12.823	12.823	359.520	0.914
6200.000	2.037	314.207	6197.987	14.912	-2.364	14.912	15.098	350.990	0.558
6300.000	2.298	322.685	6297.915	17.746	-4.854	17.746	18.398	344.702	0.413
6400.000	2.733	313.288	6397.819	20.976	-7.805	20.976	22.381	339.589	0.598
6500.000	2.652	319.935	6497.709	24.381	-11.030	24.381	26.760	335.658	0.322
6600.000	3.311	321.681	6597.573	28.418	-14.310	28.418	31.817	333.272	0.664
6700.000	4.213	323.685	6697.357	33.643	-18.276	33.643	38.286	331.488	0.912
6800.000	4.809	331.990	6797.048	40.304	-22.420	40.304	46.120	330.914	0.883

HORIZONTAL DISPLACEMENT IS
46.120 FEET AT 330.914 DEGREES