



Company: PDC Energy

Well: Zarlengo 24-4

API: 05-001-09377

Rig Name: Production / V.E.S.

State/County: Colorado / Adams

Latitude: 39.988, Longitude: -104.896

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: 8/2/2014 / 14:53

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	0.376	64.243	99.999	0.142	0.295	0.142	0.328	64.243	0.376
200.000	0.263	78.787	199.998	0.330	0.816	0.330	0.880	67.996	0.138
300.000	0.417	120.249	299.996	0.191	1.355	0.191	1.368	81.984	0.281
400.000	0.539	155.709	399.993	-0.422	1.863	-0.422	1.910	102.750	0.314
500.000	0.930	161.225	499.984	-1.619	2.318	-1.619	2.827	124.935	0.397
600.000	1.008	166.596	599.970	-3.243	2.783	-3.243	4.273	139.368	0.120
700.000	1.232	175.625	699.951	-5.171	3.069	-5.171	6.013	149.313	0.285
800.000	1.605	184.228	799.920	-7.640	3.047	-7.640	8.226	158.254	0.429
900.000	1.622	195.232	899.881	-10.403	2.572	-10.403	10.716	166.111	0.310
1000.000	1.075	185.039	999.853	-12.703	2.118	-12.703	12.878	170.534	0.596
1100.000	0.971	185.479	1099.837	-14.481	1.955	-14.481	14.612	172.312	0.104
1200.000	0.899	200.161	1199.824	-16.061	1.603	-16.061	16.141	174.299	0.249
1300.000	0.881	208.937	1299.812	-17.470	0.961	-17.470	17.497	176.852	0.137
1400.000	0.909	242.091	1399.800	-18.514	-0.112	-18.514	18.515	180.347	0.511
1500.000	0.945	241.595	1499.787	-19.278	-1.538	-19.278	19.339	184.562	0.036
1600.000	1.011	243.204	1599.773	-20.068	-3.051	-20.068	20.298	188.644	0.071
1700.000	1.192	244.827	1699.754	-20.908	-4.779	-20.908	21.447	192.876	0.184
1800.000	1.417	246.577	1799.728	-21.842	-6.855	-21.842	22.892	197.425	0.228
1900.000	1.533	250.074	1899.695	-22.789	-9.247	-22.789	24.593	202.085	0.147
2000.000	1.682	248.999	1999.656	-23.771	-11.874	-23.771	26.571	206.544	0.152
2100.000	1.522	247.512	2099.616	-24.805	-14.472	-24.805	28.718	210.260	0.165
2200.000	1.515	250.500	2199.581	-25.754	-16.946	-25.754	30.829	213.344	0.079
2300.000	1.185	259.241	2299.554	-26.389	-19.208	-26.389	32.639	216.051	0.388
2400.000	1.028	271.032	2399.535	-26.566	-21.121	-26.566	33.939	218.487	0.276
2500.000	1.086	284.435	2499.518	-26.313	-22.936	-26.313	34.906	221.077	0.253
2600.000	1.214	289.462	2599.498	-25.724	-24.852	-25.724	35.768	224.012	0.163
2700.000	1.247	292.279	2699.475	-24.958	-26.858	-24.958	36.664	227.100	0.069
2800.000	1.451	300.485	2799.447	-23.904	-28.956	-23.904	37.548	230.460	0.280
2900.000	1.783	308.616	2899.407	-22.290	-31.263	-22.290	38.396	234.512	0.403
3000.000	2.292	301.185	2999.344	-20.284	-34.190	-20.284	39.754	239.321	0.573
3100.000	2.864	295.444	3099.243	-18.175	-38.156	-18.175	42.264	244.530	0.627
3200.000	3.202	296.595	3199.102	-15.851	-42.910	-15.851	45.744	249.725	0.344
3300.000	3.089	284.636	3298.953	-13.920	-48.015	-13.920	49.992	253.832	0.665
3400.000	2.540	280.036	3398.832	-12.853	-52.804	-12.853	54.346	256.320	0.594

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	2.433	278.957	3498.738	-12.136	-57.083	-12.136	58.359	257.997	0.116
3600.000	1.822	287.042	3598.668	-11.340	-60.700	-11.340	61.750	259.418	0.680
3700.000	1.858	294.414	3698.617	-10.204	-63.696	-10.204	64.508	260.899	0.239
3800.000	1.785	300.793	3798.567	-8.736	-66.510	-8.736	67.081	262.517	0.216
3900.000	2.009	302.398	3898.512	-7.000	-69.327	-7.000	69.680	264.234	0.230
4000.000	2.096	298.235	3998.448	-5.196	-72.419	-5.196	72.605	265.896	0.173
4100.000	2.141	288.512	4098.380	-3.738	-75.801	-3.738	75.894	267.177	0.362
4200.000	2.080	285.562	4198.312	-2.658	-79.321	-2.658	79.366	268.081	0.125
4300.000	2.030	278.413	4298.248	-1.912	-82.821	-1.912	82.844	268.678	0.261
4400.000	2.357	273.252	4398.174	-1.536	-86.627	-1.536	86.640	268.984	0.382
4500.000	2.716	261.017	4498.077	-1.789	-91.020	-1.789	91.038	268.874	0.648
4600.000	2.937	252.684	4597.956	-2.922	-95.807	-2.922	95.851	268.253	0.466
4700.000	3.319	243.082	4697.807	-4.995	-100.834	-4.995	100.958	267.164	0.647
4800.000	3.186	255.851	4797.647	-6.985	-106.110	-6.985	106.340	266.234	0.735
4847.000	3.355	252.920	4844.571	-7.708	-108.691	-7.708	108.964	265.944	0.506

HORIZONTAL DISPLACEMENT IS
108.964 FEET AT 265.944 DEGREES