



Company: PDC Energy
Well: Walsh #24-24
API: 05-123-20577
Rig Name: Production / VESSI
State/County: Colorado/Weld
Latitude: 40.118, Longitude: -104.953
Directions are relative to True North
VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : Gournrd Level

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: hagyar-de_01.ut
Minimum Curvature Method
Report Date/Time: 10/27/2014 / 13:20

VES Survey International
Henderson, Colorado
303-853-4976
Kevin McDowell

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	0.379	297.219	99.999	0.151	-0.294	0.151	0.331	297.219	0.379
200.000	0.440	296.008	199.997	0.471	-0.934	0.471	1.046	296.774	0.062
300.000	0.313	295.153	299.995	0.756	-1.527	0.756	1.704	296.341	0.127
400.000	0.322	298.148	399.993	1.005	-2.022	1.005	2.258	296.422	0.019
500.000	0.373	272.138	499.991	1.150	-2.596	1.150	2.839	293.888	0.164
600.000	0.274	297.343	599.990	1.272	-3.134	1.272	3.382	292.087	0.171
700.000	0.410	23.271	699.988	1.711	-3.205	1.711	3.633	298.089	0.477
800.000	0.676	19.229	799.984	2.597	-2.869	2.597	3.870	312.146	0.269
900.000	0.705	33.902	899.977	3.665	-2.332	3.665	4.344	327.532	0.179
1000.000	0.575	8.640	999.971	4.672	-1.913	4.672	5.048	337.730	0.307
1100.000	0.448	6.285	1099.967	5.557	-1.795	5.557	5.839	342.097	0.129
1200.000	0.425	359.635	1199.964	6.316	-1.755	6.316	6.555	344.474	0.055
1300.000	0.456	331.807	1299.961	7.038	-1.945	7.038	7.302	344.551	0.214
1400.000	0.605	312.261	1399.957	7.744	-2.524	7.744	8.145	341.947	0.233
1500.000	0.662	294.356	1499.951	8.337	-3.441	8.337	9.020	337.571	0.205
1600.000	0.587	300.733	1599.945	8.837	-4.408	8.837	9.876	333.491	0.102
1700.000	0.530	307.899	1699.940	9.383	-5.213	9.383	10.734	330.944	0.090
1800.000	0.690	302.686	1799.934	9.993	-6.085	9.993	11.700	328.661	0.168
1900.000	0.981	299.870	1899.923	10.744	-7.334	10.744	13.008	325.683	0.294
2000.000	1.464	297.007	1999.900	11.750	-9.214	11.750	14.932	321.899	0.486
2100.000	1.618	292.824	2099.864	12.878	-11.653	12.878	17.367	317.859	0.191
2200.000	1.655	297.188	2199.823	14.085	-14.239	14.085	20.028	314.690	0.130
2300.000	1.445	292.458	2299.787	15.227	-16.688	15.227	22.591	312.378	0.246
2400.000	1.762	299.806	2399.748	16.473	-19.187	16.473	25.288	310.646	0.378
2500.000	1.947	296.239	2499.695	17.988	-22.045	17.988	28.453	309.213	0.218
2600.000	1.859	310.007	2599.641	19.781	-24.811	19.781	31.732	308.565	0.464
2700.000	2.021	312.566	2699.583	22.017	-27.352	22.017	35.112	308.832	0.184
2800.000	1.853	308.008	2799.526	24.205	-29.924	24.205	38.488	308.968	0.228
2900.000	1.316	296.664	2899.488	25.716	-32.224	25.716	41.227	308.591	0.619
3000.000	1.411	289.739	2999.460	26.647	-34.410	26.647	43.521	307.754	0.190
3100.000	1.322	286.499	3099.431	27.390	-36.675	27.390	45.774	306.754	0.118
3200.000	1.162	270.909	3199.408	27.734	-38.795	27.734	47.689	305.561	0.373
3300.000	0.993	279.644	3299.390	27.895	-40.662	27.895	49.311	304.451	0.235
3400.000	1.072	258.387	3399.374	27.852	-42.433	27.852	50.757	303.280	0.389
3500.000	1.279	247.412	3499.353	27.235	-44.380	27.235	52.070	301.536	0.305

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	1.794	218.526	3599.319	25.582	-46.386	25.582	52.972	298.877	0.914
3700.000	1.867	231.798	3699.268	23.350	-48.641	23.350	53.955	295.643	0.429
3800.000	1.891	217.639	3799.215	21.035	-50.929	21.035	55.102	292.442	0.464
3900.000	2.018	233.749	3899.157	18.687	-53.357	18.687	56.535	289.302	0.562
4000.000	2.126	219.815	3999.093	16.221	-55.965	16.221	58.268	286.164	0.514
4100.000	2.305	222.896	4099.018	13.324	-58.521	13.324	60.018	282.826	0.214
4200.000	2.955	219.592	4198.912	9.865	-61.532	9.865	62.318	279.108	0.667
4300.000	2.783	218.927	4298.787	5.990	-64.700	5.990	64.976	275.290	0.175
4400.000	3.389	226.744	4398.642	2.076	-68.377	2.076	68.409	271.739	0.736
4500.000	3.648	234.282	4498.454	-1.806	-73.113	-1.806	73.135	268.585	0.530
4600.000	3.252	236.221	4598.272	-5.241	-78.054	-5.241	78.229	266.159	0.413
4700.000	3.226	232.892	4698.113	-8.515	-82.655	-8.515	83.093	264.118	0.190
4800.000	3.151	237.771	4797.958	-11.679	-87.224	-11.679	88.002	262.374	0.281
4900.000	2.821	237.796	4897.822	-14.456	-91.631	-14.456	92.765	261.035	0.330
5000.000	2.669	233.336	4997.707	-17.158	-95.582	-17.158	97.110	259.823	0.262
5100.000	2.703	223.626	5097.598	-20.255	-99.077	-20.255	101.126	258.446	0.456
5200.000	2.144	222.070	5197.508	-23.351	-101.957	-23.351	104.597	257.100	0.563
5300.000	1.864	230.287	5297.447	-25.779	-104.461	-25.779	107.595	256.138	0.401
5400.000	1.498	231.352	5397.404	-27.634	-106.733	-27.634	110.253	255.484	0.367
5500.000	1.644	256.407	5497.367	-28.788	-109.149	-28.788	112.881	255.225	0.696
5600.000	1.351	260.807	5597.333	-29.313	-111.707	-29.313	115.489	255.296	0.315
5700.000	1.485	253.209	5697.303	-29.876	-114.111	-29.876	117.957	255.328	0.230
5800.000	1.417	254.041	5797.271	-30.590	-116.540	-30.590	120.488	255.292	0.071
5900.000	1.374	250.541	5897.241	-31.329	-118.859	-31.329	122.918	255.234	0.095
6000.000	1.413	252.473	5997.211	-32.100	-121.165	-32.100	125.345	255.162	0.061
6100.000	1.084	262.220	6097.188	-32.599	-123.277	-32.599	127.514	255.188	0.391
6200.000	0.956	285.412	6197.172	-32.505	-125.018	-32.505	129.175	255.426	0.429
6300.000	0.756	297.647	6297.161	-31.977	-126.407	-31.977	130.389	255.804	0.270
6400.000	0.614	281.867	6397.154	-31.561	-127.516	-31.561	131.364	256.098	0.235
6500.000	0.341	332.176	6497.151	-31.188	-128.179	-31.188	131.919	256.325	0.475
6600.000	0.647	337.532	6597.147	-30.403	-128.534	-30.403	132.080	256.692	0.309
6700.000	0.462	344.287	6697.142	-29.493	-128.859	-29.493	132.191	257.108	0.195
6800.000	0.510	326.705	6797.139	-28.733	-129.212	-28.733	132.368	257.463	0.156
6900.000	0.581	312.289	6897.134	-28.020	-129.832	-28.020	132.821	257.821	0.154
7000.000	0.414	316.298	6997.130	-27.417	-130.456	-27.417	133.306	258.131	0.171
7100.000	0.191	358.131	7097.129	-26.989	-130.711	-26.989	133.469	258.334	0.300
7200.000	0.223	341.140	7197.128	-26.639	-130.780	-26.639	133.465	258.487	0.069
7300.000	0.510	324.915	7297.126	-26.090	-131.099	-26.090	133.669	258.744	0.303
7400.000	0.255	66.326	7397.125	-25.637	-131.151	-25.637	133.633	258.940	0.614
7500.000	0.663	36.010	7497.121	-25.080	-130.607	-25.080	132.993	259.130	0.461
7600.000	0.937	40.126	7597.112	-23.987	-129.740	-23.987	131.939	259.525	0.280
7700.000	0.350	41.601	7697.105	-23.134	-129.011	-23.134	131.069	259.834	0.587
7800.000	0.391	54.258	7797.103	-22.706	-128.531	-22.706	130.521	259.982	0.091
7850.000	0.581	73.310	7847.101	-22.533	-128.150	-22.533	130.116	260.027	0.495

HORIZONTAL DISPLACEMENT IS
130.116 FEET AT 260.027 DEGREES