



Company: Anadarko Petroleum  
 Well: Stieber 12-24A  
 API: 05-123-20737  
 Rig Name: Production/ VES  
 State/County: Colorado/Weld  
 Latitude: 40.035, Longitude: -104.845  
 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: hagyar-de\_01.ut  
 Minimum Curvature Method  
 Report Date/Time: 2/27/2014 / 16:14

VAUGHN ENERGY SERVICES  
 HENDERSON, COLORADO  
 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	0.552	208.947	99.998	-0.422	-0.233	-0.422	0.482	208.947	0.552
200.000	0.711	213.446	199.992	-1.361	-0.808	-1.361	1.583	210.709	0.166
300.000	0.726	212.218	299.984	-2.415	-1.488	-2.415	2.837	211.644	0.022
400.000	0.723	225.390	399.977	-3.395	-2.276	-3.395	4.087	213.837	0.166
500.000	0.881	237.033	499.967	-4.256	-3.370	-4.256	5.429	218.372	0.226
600.000	0.683	243.189	599.957	-4.944	-4.547	-4.944	6.717	222.608	0.214
700.000	0.590	255.171	699.951	-5.345	-5.577	-5.345	7.725	226.222	0.162
800.000	0.635	277.071	799.946	-5.408	-6.626	-5.408	8.553	230.777	0.237
900.000	0.673	277.934	899.939	-5.259	-7.758	-5.259	9.372	235.867	0.039
1000.000	0.898	251.304	999.930	-5.429	-9.082	-5.429	10.581	239.130	0.423
1100.000	0.883	258.911	1099.918	-5.828	-10.581	-5.828	12.080	241.152	0.119
1200.000	0.951	270.990	1199.905	-5.962	-12.167	-5.962	13.549	243.893	0.204
1300.000	1.171	266.561	1299.888	-6.009	-14.017	-6.009	15.251	246.795	0.235
1400.000	1.040	277.244	1399.870	-5.956	-15.938	-5.956	17.014	249.508	0.244
1500.000	1.227	264.692	1499.850	-5.941	-17.904	-5.941	18.864	251.644	0.310
1600.000	1.209	274.431	1599.828	-5.958	-20.022	-5.958	20.890	253.428	0.208
1700.000	1.307	275.048	1699.803	-5.777	-22.210	-5.777	22.949	255.421	0.099
1800.000	1.746	267.549	1799.768	-5.741	-24.868	-5.741	25.522	257.000	0.481
1900.000	1.857	273.011	1899.718	-5.721	-28.008	-5.721	28.587	258.455	0.205
2000.000	1.932	272.685	1999.664	-5.557	-31.311	-5.557	31.800	259.936	0.076
2100.000	1.991	274.213	2099.605	-5.351	-34.728	-5.351	35.138	261.241	0.079
2200.000	1.884	278.615	2199.548	-4.977	-38.086	-4.977	38.410	262.555	0.183
2300.000	1.897	278.609	2299.494	-4.483	-41.348	-4.483	41.590	263.812	0.013
2400.000	2.053	275.296	2399.434	-4.070	-44.768	-4.070	44.953	264.806	0.193
2500.000	1.917	273.157	2499.374	-3.812	-48.222	-3.812	48.372	265.480	0.156
2600.000	1.843	273.133	2599.320	-3.632	-51.497	-3.632	51.625	265.966	0.073
2700.000	1.970	271.808	2699.265	-3.490	-54.821	-3.490	54.932	266.357	0.134
2800.000	1.561	274.214	2799.217	-3.336	-57.897	-3.336	57.993	266.703	0.415
2900.000	1.488	273.254	2899.182	-3.162	-60.551	-3.162	60.634	267.011	0.078
3000.000	1.505	275.855	2999.148	-2.954	-63.153	-2.954	63.223	267.322	0.070
3100.000	1.065	265.093	3099.123	-2.900	-65.385	-2.900	65.450	267.461	0.500
3200.000	0.873	262.572	3199.108	-3.078	-67.067	-3.078	67.137	267.373	0.197
3300.000	0.778	246.575	3299.098	-3.446	-68.445	-3.446	68.531	267.118	0.248
3400.000	0.874	262.674	3399.088	-3.813	-69.824	-3.813	69.928	266.874	0.250
3500.000	0.697	262.386	3499.078	-3.991	-71.184	-3.991	71.296	266.791	0.177

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	0.550	259.550	3599.072	-4.159	-72.260	-4.159	72.379	266.706	0.150
3700.000	0.500	262.551	3699.068	-4.302	-73.165	-4.302	73.291	266.635	0.057
3800.000	0.565	248.105	3799.064	-4.543	-74.055	-4.543	74.194	266.490	0.148
3900.000	0.762	250.627	3899.057	-4.947	-75.139	-4.947	75.302	266.233	0.199
4000.000	0.837	250.236	3999.047	-5.415	-76.454	-5.415	76.645	265.949	0.075
4100.000	0.791	276.850	4099.038	-5.579	-77.827	-5.579	78.026	265.900	0.377
4200.000	0.723	286.725	4199.029	-5.315	-79.117	-5.315	79.295	266.157	0.147
4300.000	0.698	303.739	4299.021	-4.795	-80.228	-4.795	80.371	266.580	0.212
4400.000	0.791	317.022	4399.013	-3.951	-81.206	-3.951	81.302	267.214	0.195
4500.000	0.689	315.063	4499.005	-3.020	-82.101	-3.020	82.157	267.893	0.105
4600.000	0.721	332.677	4598.997	-2.035	-82.815	-2.035	82.840	268.592	0.218
4700.000	0.875	309.688	4698.988	-0.988	-83.692	-0.988	83.698	269.324	0.352
4800.000	0.884	283.029	4798.976	-0.326	-85.031	-0.326	85.032	269.780	0.406
4900.000	0.934	281.934	4898.964	0.016	-86.581	0.016	86.581	270.011	0.053
5000.000	0.525	302.773	4998.956	0.433	-87.763	0.433	87.764	270.282	0.481
5100.000	0.436	268.249	5098.952	0.669	-88.528	0.669	88.531	270.433	0.298
5200.000	0.418	289.276	5198.949	0.778	-89.252	0.778	89.256	270.499	0.157
5300.000	0.540	268.698	5298.946	0.887	-90.067	0.887	90.072	270.564	0.209
5400.000	0.562	293.857	5398.942	1.075	-90.987	1.075	90.993	270.677	0.241
5500.000	0.531	268.368	5498.937	1.260	-91.898	1.260	91.907	270.785	0.243
5600.000	0.476	292.781	5598.933	1.408	-92.745	1.408	92.756	270.870	0.220
5700.000	0.420	298.155	5698.930	1.741	-93.451	1.741	93.467	271.068	0.071
5800.000	0.488	176.165	5798.929	1.489	-93.746	1.489	93.757	270.910	0.794
5900.000	0.691	283.057	5898.926	1.201	-94.304	1.201	94.312	270.730	0.954
6000.000	0.835	286.843	5998.917	1.548	-95.589	1.548	95.601	270.928	0.152
6100.000	0.786	334.166	6098.908	2.376	-96.584	2.376	96.614	271.409	0.652
6200.000	0.975	346.093	6198.896	3.819	-97.088	3.819	97.163	272.253	0.263
6300.000	1.069	330.131	6298.880	5.454	-97.757	5.454	97.909	273.193	0.299
6400.000	0.932	340.189	6398.865	7.028	-98.497	7.028	98.748	274.081	0.222
6500.000	0.642	334.044	6498.856	8.298	-99.018	8.298	99.365	274.790	0.302
6600.000	0.897	357.107	6598.847	9.583	-99.303	9.583	99.764	275.512	0.396
6700.000	1.009	346.819	6698.833	11.222	-99.543	11.222	100.174	276.432	0.204
6800.000	1.034	345.815	6798.817	12.954	-99.965	12.954	100.801	277.384	0.030
6900.000	1.209	340.643	6898.798	14.824	-100.536	14.824	101.623	278.388	0.203
7000.000	1.356	12.455	6998.774	16.976	-100.630	16.976	102.052	279.575	0.717
7100.000	1.300	355.948	7098.748	19.263	-100.455	19.263	102.285	280.855	0.385
7200.000	1.265	10.927	7198.723	21.478	-100.326	21.478	102.599	282.084	0.336
7300.000	1.311	4.187	7298.698	23.703	-100.033	23.703	102.803	283.331	0.158
7400.000	1.243	6.577	7398.673	25.922	-99.826	25.922	103.136	284.557	0.086
7500.000	1.397	24.441	7498.647	28.110	-99.197	28.110	103.103	285.821	0.437
7600.000	1.458	5.935	7598.616	30.485	-98.561	30.485	103.168	287.187	0.463
7700.000	1.421	13.957	7698.585	32.953	-98.130	32.953	103.516	288.562	0.205
7800.000	1.591	19.248	7798.550	35.466	-97.374	35.466	103.632	290.013	0.220
7900.000	1.196	25.405	7898.520	37.720	-96.469	37.720	103.581	291.356	0.422

HORIZONTAL DISPLACEMENT IS  
103.581 FEET AT 291.356 DEGREES