

Company: Anadarko Petroleum Corp.

Well: HSR-Rademacher 12-30

Rig Name: Production/VES

State/County: Colorado/Weld

Latitude: 40.196, Longitude: -104.938

Directions are relative to True North

VS-Azi: 0.000 Degrees



Depth Reference : RKB=Ground Level

DRILLOG GYRO SURVEY CALCULATIONS

Filename: gyro\_run01-de\_01.ut

Minimum Curvature Method

Report Date/Time: 1/9/2014 / 10:37

Vaughn Energy Services

Henderson, CO

303-853-4976

Surveyor: Levi Sheldon

HSR-Rademacher 12-30 / API 05-123-18846

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	0.730	73.597	99.997	0.180	0.611	0.180	0.637	73.597	0.730
200.000	0.613	61.330	199.990	0.616	1.691	0.616	1.800	69.977	0.185
300.000	0.435	96.888	299.987	0.827	2.537	0.827	2.668	71.940	0.362
400.000	0.216	132.793	399.985	0.654	3.052	0.654	3.121	77.910	0.289
500.000	0.228	236.156	499.984	0.415	3.025	0.415	3.053	82.188	0.348
600.000	0.597	282.254	599.982	0.415	2.351	0.415	2.387	79.991	0.469
700.000	0.510	267.246	699.977	0.504	1.397	0.504	1.485	70.155	0.168
800.000	0.307	272.932	799.975	0.496	0.684	0.496	0.845	54.047	0.208
900.000	0.563	308.186	899.972	0.814	0.031	0.814	0.814	2.190	0.359
1000.000	0.588	313.301	999.967	1.469	-0.728	1.469	1.639	333.634	0.057
1100.000	0.524	310.924	1099.962	2.120	-1.447	2.120	2.567	325.688	0.067
1200.000	0.599	262.708	1199.958	2.354	-2.311	2.354	3.298	315.525	0.464
1300.000	0.645	287.174	1299.952	2.454	-3.367	2.454	4.166	306.081	0.267
1400.000	0.885	274.659	1399.943	2.683	-4.675	2.683	5.390	299.848	0.291
1500.000	0.825	272.192	1499.932	2.773	-6.164	2.773	6.759	294.220	0.071
1600.000	1.483	308.084	1599.912	3.599	-7.902	3.599	8.683	294.486	0.948
1700.000	1.326	284.622	1699.883	4.689	-10.041	4.689	11.082	295.034	0.592
1800.000	1.597	312.131	1799.852	5.916	-12.194	5.916	13.553	295.881	0.743
1900.000	1.196	318.708	1899.822	7.635	-13.916	7.635	15.872	298.751	0.431
2000.000	0.529	285.034	1999.811	8.539	-15.050	8.539	17.304	299.568	0.811

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
2100.000	0.665	331.002	2099.806	9.166	-15.777	9.166	18.247	300.155	0.483
2200.000	0.680	325.925	2199.799	10.165	-16.391	10.165	19.287	301.805	0.061
2300.000	0.682	327.461	2299.792	11.158	-17.044	11.158	20.371	303.212	0.018
2400.000	0.361	331.342	2399.787	11.936	-17.515	11.936	21.195	304.274	0.322
2500.000	0.037	18.721	2499.787	12.243	-17.655	12.243	21.485	304.740	0.337
2600.000	0.233	328.234	2599.786	12.447	-17.752	12.447	21.681	305.037	0.211
2700.000	0.085	281.876	2699.786	12.635	-17.931	12.635	21.936	305.171	0.185
2800.000	0.136	41.425	2799.786	12.740	-17.925	12.740	21.991	305.402	0.192
2900.000	0.181	70.455	2899.786	12.882	-17.697	12.882	21.889	306.050	0.091
3000.000	0.445	140.242	2999.784	12.636	-17.300	12.636	21.423	306.145	0.419
3100.000	0.268	164.525	3099.782	12.112	-16.989	12.112	20.865	305.487	0.229
3200.000	0.347	178.726	3199.781	11.585	-16.920	11.585	20.506	304.399	0.109
3300.000	0.606	263.061	3299.778	11.218	-17.438	11.218	20.735	302.755	0.667
3400.000	0.301	187.336	3399.776	10.894	-17.996	10.894	21.037	301.190	0.606
3500.000	0.131	150.955	3499.775	10.535	-17.974	10.535	20.834	300.375	0.210
3600.000	0.263	352.000	3599.775	10.662	-17.951	10.662	20.878	300.710	0.388
3700.000	0.491	10.844	3699.773	11.311	-17.902	11.311	21.176	302.286	0.257
3800.000	0.685	10.571	3799.767	12.320	-17.712	12.320	21.575	304.821	0.194
3900.000	0.712	2.209	3899.760	13.528	-17.578	13.528	22.181	307.582	0.105
4000.000	0.815	318.195	3999.752	14.680	-18.028	14.680	23.249	309.155	0.580
4100.000	1.058	4.581	4099.740	16.130	-18.429	16.130	24.491	311.194	0.770
4200.000	1.030	347.983	4199.723	17.929	-18.542	17.929	25.793	314.037	0.303
4300.000	1.366	352.637	4299.701	19.990	-18.882	19.990	27.498	316.633	0.350
4400.000	1.297	345.927	4399.674	22.270	-19.310	22.270	29.476	319.072	0.170
4500.000	0.696	355.390	4499.659	23.974	-19.634	23.974	30.988	320.683	0.621
4600.000	0.672	326.282	4599.652	25.068	-20.008	25.068	32.074	321.404	0.345
4700.000	0.849	2.140	4699.644	26.295	-20.306	26.295	33.223	322.323	0.498
4800.000	0.552	347.776	4799.636	27.506	-20.380	27.506	34.234	323.464	0.343
4900.000	0.598	264.068	4899.633	27.923	-21.001	27.923	34.939	323.053	0.768
5000.000	0.782	283.455	4999.626	28.027	-22.183	28.027	35.744	321.639	0.295
5100.000	0.735	259.192	5099.617	28.066	-23.476	28.066	36.590	320.089	0.322
5200.000	0.496	258.403	5199.611	27.859	-24.530	27.859	37.119	318.636	0.238
5300.000	1.013	272.644	5299.602	27.812	-25.837	27.812	37.962	317.108	0.546
5400.000	1.287	286.766	5399.582	28.177	-27.795	28.177	39.579	315.391	0.392
5500.000	0.744	260.064	5499.567	28.389	-29.510	28.389	40.948	313.891	0.706
5600.000	0.263	202.662	5599.563	28.065	-30.237	28.065	41.255	312.866	0.641
5700.000	0.219	22.452	5699.563	28.029	-30.253	28.029	41.242	312.815	0.482
5800.000	1.073	320.880	5799.556	28.932	-30.771	28.932	42.236	313.236	0.988
5900.000	0.675	264.189	5899.546	29.599	-31.948	29.599	43.551	312.814	0.901
6000.000	0.457	338.839	5999.542	29.910	-32.677	29.910	44.300	312.469	0.708
6100.000	0.534	345.497	6099.538	30.733	-32.938	30.733	45.049	313.017	0.096
6200.000	1.416	334.953	6199.523	32.304	-33.578	32.304	46.594	313.892	0.897

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
6300.000	0.895	293.367	6299.504	33.733	-34.818	33.733	48.479	314.093	0.954
6400.000	0.627	333.090	6399.496	34.531	-35.783	34.531	49.727	313.980	0.575
6500.000	0.387	322.968	6499.492	35.288	-36.234	35.288	50.578	314.242	0.256
6600.000	0.616	312.271	6599.488	35.920	-36.835	35.920	51.449	314.279	0.247
6700.000	1.271	320.742	6699.474	37.140	-37.935	37.140	53.089	314.393	0.667
6800.000	1.660	340.092	6799.441	39.360	-39.130	39.360	55.501	315.168	0.624
6900.000	2.315	348.263	6899.381	42.700	-40.034	42.700	58.532	316.846	0.712
7000.000	1.940	5.482	6999.313	46.363	-40.283	46.363	61.418	319.014	0.737
7100.000	1.677	28.452	7099.264	49.334	-39.424	49.334	63.152	321.371	0.765