

Company: Anadarko Petroleum Corp.

Well: HSR-Connie #1-18

API: 05-123-18844

Rig Name: Production / CoreTech

State/County: Colorado/Weld

Latitude: 40.232, Longitude: -104.925

Directions are relative to True North

VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB = Ground Level

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run02-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 1/2/2014 / 14:39

Vaughn Energy Services

Henderson, CO

303-853-4976

Charles Hines

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	0.296	56.317	100.000	0.143	0.215	0.143	0.258	56.317	0.296
200.000	0.227	4.699	199.999	0.484	0.446	0.484	0.658	42.648	0.236
300.000	0.190	4.434	299.998	0.847	0.475	0.847	0.971	29.268	0.037
400.000	0.110	268.000	399.998	1.009	0.392	1.009	1.083	21.213	0.230
500.000	0.317	262.775	499.997	0.971	0.022	0.971	0.971	1.270	0.208
600.000	0.314	267.351	599.995	0.924	-0.526	0.924	1.063	330.327	0.025
700.000	0.519	242.976	699.993	0.705	-1.203	0.705	1.394	300.390	0.266
800.000	0.724	227.336	799.987	0.072	-2.070	0.072	2.071	271.987	0.264
900.000	0.716	229.695	899.979	-0.760	-3.011	-0.760	3.106	255.827	0.031
1000.000	0.723	212.987	999.971	-1.694	-3.831	-1.694	4.189	246.149	0.209
1100.000	0.800	206.635	1099.963	-2.847	-4.488	-2.847	5.314	237.609	0.114
1200.000	0.807	210.175	1199.953	-4.079	-5.154	-4.079	6.573	231.641	0.050
1300.000	0.984	252.977	1299.942	-4.939	-6.329	-4.939	8.028	232.032	0.674
1400.000	1.146	265.496	1399.924	-5.269	-8.147	-5.269	9.702	237.108	0.283
1500.000	1.124	283.783	1499.905	-5.114	-10.097	-5.114	11.318	243.138	0.361
1600.000	0.784	308.507	1599.891	-4.455	-11.584	-4.455	12.411	248.966	0.526
1700.000	0.795	306.015	1699.882	-3.621	-12.681	-3.621	13.187	254.064	0.036
1800.000	0.666	310.955	1799.874	-2.832	-13.681	-2.832	13.971	258.305	0.144
1900.000	0.469	311.053	1899.869	-2.182	-14.428	-2.182	14.592	261.399	0.197
2000.000	0.603	292.280	1999.865	-1.714	-15.223	-1.714	15.319	263.576	0.219
2100.000	0.250	301.995	2099.862	-1.399	-15.895	-1.399	15.956	264.970	0.359
2200.000	0.293	211.500	2199.861	-1.502	-16.214	-1.502	16.283	264.708	0.387
2300.000	0.494	100.779	2299.859	-1.801	-15.924	-1.801	16.026	263.549	0.657
2400.000	0.497	104.140	2399.856	-1.987	-15.081	-1.987	15.211	262.494	0.029
2500.000	0.271	90.239	2499.853	-2.094	-14.424	-2.094	14.575	261.741	0.243
2600.000	0.318	217.026	2599.853	-2.317	-14.355	-2.317	14.541	260.833	0.527
2700.000	0.613	218.247	2699.849	-2.959	-14.854	-2.959	15.146	258.734	0.295
2800.000	0.645	227.295	2799.843	-3.761	-15.599	-3.761	16.046	256.445	0.104
2900.000	0.726	249.636	2899.836	-4.363	-16.606	-4.363	17.170	255.279	0.277
3000.000	0.659	253.081	2999.829	-4.751	-17.750	-4.751	18.375	255.016	0.079
3100.000	0.491	261.571	3099.824	-4.981	-18.724	-4.981	19.375	255.103	0.188
3200.000	0.683	286.376	3199.819	-4.876	-19.720	-4.876	20.314	256.112	0.314
3300.000	0.917	279.497	3299.809	-4.576	-21.081	-4.576	21.572	257.754	0.253
3400.000	0.839	297.643	3399.798	-4.104	-22.519	-4.104	22.890	259.672	0.288

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	0.972	283.136	3499.785	-3.571	-23.994	-3.571	24.258	261.534	0.264
3600.000	1.018	268.737	3599.770	-3.398	-25.708	-3.398	25.932	262.470	0.253
3700.000	0.780	255.153	3699.758	-3.592	-27.254	-3.592	27.490	262.491	0.317
3800.000	0.942	266.786	3799.747	-3.813	-28.733	-3.813	28.985	262.441	0.237
3900.000	0.947	306.970	3899.734	-3.362	-30.214	-3.362	30.400	263.651	0.649
4000.000	1.043	346.027	3999.720	-1.982	-31.094	-1.982	31.157	266.354	0.671
4100.000	1.303	308.218	4099.701	-0.395	-32.207	-0.395	32.209	269.297	0.799
4200.000	0.986	327.170	4199.681	1.031	-33.567	1.031	33.582	271.759	0.490
4300.000	0.946	306.283	4299.667	2.242	-34.698	2.242	34.771	273.697	0.352
4400.000	0.640	302.274	4399.657	3.029	-35.836	3.029	35.964	274.831	0.310
4500.000	0.588	255.369	4499.652	3.198	-36.805	3.198	36.944	274.965	0.491
4600.000	0.400	257.669	4599.648	2.994	-37.642	2.994	37.761	274.547	0.189
4700.000	0.628	241.923	4699.644	2.661	-38.466	2.661	38.558	273.958	0.266
4800.000	0.401	240.487	4799.640	2.231	-39.254	2.231	39.318	273.253	0.227
4900.000	0.390	259.110	4899.638	1.994	-39.893	1.994	39.943	272.861	0.128
5000.000	0.203	256.456	4999.637	1.888	-40.399	1.888	40.443	272.676	0.187
5100.000	0.346	269.850	5099.635	1.846	-40.873	1.846	40.915	272.586	0.155
5200.000	0.356	336.204	5199.634	2.130	-41.300	2.130	41.355	272.952	0.384
5300.000	0.234	20.180	5299.633	2.605	-41.355	2.605	41.437	273.605	0.248
5400.000	0.139	52.756	5399.632	2.870	-41.189	2.870	41.289	273.986	0.139
5500.000	0.226	191.314	5499.632	2.750	-41.131	2.750	41.223	273.825	0.342
5600.000	0.217	320.964	5599.632	2.703	-41.289	2.703	41.377	273.746	0.401
5700.000	0.354	260.890	5699.631	2.801	-41.713	2.801	41.807	273.842	0.310
5800.000	0.259	267.170	5799.629	2.741	-42.245	2.741	42.333	273.712	0.101
5900.000	0.427	204.746	5899.628	2.392	-42.626	2.392	42.693	273.211	0.383
6000.000	0.095	8.124	5999.627	2.135	-42.770	2.135	42.824	272.858	0.518
6100.000	0.691	234.208	6099.625	1.864	-43.248	1.864	43.288	272.468	0.760
6200.000	0.516	279.793	6199.620	1.588	-44.181	1.588	44.209	272.059	0.495
6300.000	0.598	237.128	6299.615	1.382	-45.062	1.382	45.084	271.756	0.412
6400.000	0.769	236.671	6399.608	0.730	-46.061	0.730	46.067	270.908	0.171
6500.000	1.020	225.217	6499.596	-0.266	-47.253	-0.266	47.254	269.678	0.307
6600.000	1.404	238.471	6599.574	-1.533	-48.929	-1.533	48.953	268.205	0.473
6700.000	1.137	210.471	6699.550	-3.029	-50.476	-3.029	50.567	266.566	0.667
6800.000	0.706	193.176	6799.537	-4.484	-51.120	-4.484	51.316	264.987	0.509
6900.000	0.473	171.070	6899.532	-5.491	-51.196	-5.491	51.490	263.878	0.321
7000.000	0.166	93.783	6999.530	-5.909	-50.987	-5.909	51.328	263.390	0.466
7050.000	0.464	78.689	7049.529	-5.874	-50.716	-5.874	51.055	263.394	0.612
HORIZONTAL DISPLACEMENT IS 51.055 FEET AT 263.394 DEGREES									