

Company: Anadarko Petroleum Corp.

Well: Nelson Harold Unit A True #1

API: 05-123-11548

Rig Name: Production/Coretech

State/County: Colorado/Weld

Latitude: 40.178, Longitude: -104.927

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_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 5/16/2014 / 14:51

Vaughn Energy Services

Henderson, CO

303-853-4976

Levi Sheldon

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	0.385	31.296	99.999	0.287	0.175	0.287	0.336	31.296	0.385
200.000	0.157	180.229	199.999	0.437	0.349	0.437	0.559	38.545	0.525
300.000	0.167	162.158	299.998	0.162	0.393	0.162	0.425	67.639	0.052
400.000	0.222	184.236	399.998	-0.171	0.423	-0.171	0.456	112.008	0.092
500.000	0.192	191.069	499.997	-0.529	0.377	-0.529	0.649	144.553	0.039
600.000	0.570	208.694	599.995	-1.130	0.106	-1.130	1.135	174.661	0.391
700.000	0.570	203.142	699.990	-2.024	-0.329	-2.024	2.050	189.224	0.055
800.000	0.713	210.936	799.983	-3.014	-0.844	-3.014	3.130	195.637	0.167
900.000	0.711	202.392	899.976	-4.121	-1.400	-4.121	4.353	198.760	0.106
1000.000	0.729	208.345	999.968	-5.255	-1.938	-5.255	5.601	200.245	0.077
1100.000	0.740	211.562	1099.960	-6.365	-2.578	-6.365	6.868	202.051	0.043
1200.000	0.724	231.482	1199.952	-7.309	-3.410	-7.309	8.066	205.015	0.254
1300.000	0.830	223.623	1299.942	-8.227	-4.404	-8.227	9.331	208.163	0.151
1400.000	0.759	220.291	1399.933	-9.256	-5.332	-9.256	10.682	209.946	0.085
1500.000	1.038	238.643	1499.921	-10.233	-6.534	-10.233	12.141	212.561	0.398
1600.000	0.950	256.753	1599.906	-10.894	-8.115	-10.894	13.585	216.682	0.325
1700.000	1.189	254.453	1699.888	-11.363	-9.922	-11.363	15.085	221.129	0.243
1800.000	1.439	256.006	1799.862	-11.944	-12.140	-11.944	17.031	225.467	0.252
1900.000	1.514	251.098	1899.829	-12.676	-14.609	-12.676	19.342	229.052	0.147
2000.000	1.533	279.428	1999.795	-12.885	-17.178	-12.885	21.474	233.127	0.746
2100.000	1.377	274.283	2099.763	-12.576	-19.696	-12.576	23.369	237.441	0.203
2200.000	1.502	289.538	2199.731	-12.048	-22.130	-12.048	25.197	241.435	0.402
2300.000	1.500	283.422	2299.697	-11.306	-24.638	-11.306	27.108	245.351	0.160
2400.000	1.676	286.174	2399.659	-10.595	-27.316	-10.595	29.299	248.801	0.192
2500.000	1.734	295.031	2499.615	-9.547	-30.092	-9.547	31.570	252.397	0.269
2600.000	1.719	291.182	2599.569	-8.365	-32.861	-8.365	33.909	255.718	0.117
2700.000	1.451	302.973	2699.531	-7.134	-35.321	-7.134	36.035	258.581	0.420
2800.000	1.486	306.317	2799.498	-5.677	-37.429	-5.677	37.857	261.375	0.093
2900.000	1.237	315.590	2899.470	-4.138	-39.229	-4.138	39.447	263.979	0.332
3000.000	1.115	328.410	2999.449	-2.538	-40.494	-2.538	40.573	266.414	0.289
3100.000	1.008	321.917	3099.432	-1.017	-41.546	-1.017	41.558	268.598	0.161
3200.000	0.965	318.802	3199.417	0.309	-42.643	0.309	42.644	270.415	0.069
3300.000	0.986	331.292	3299.403	1.697	-43.611	1.697	43.644	272.228	0.213
3400.000	0.914	320.026	3399.389	3.062	-44.536	3.062	44.642	273.934	0.200

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	1.199	305.831	3499.372	4.286	-45.897	4.286	46.096	275.335	0.385
3600.000	1.164	299.989	3599.351	5.405	-47.624	5.405	47.930	276.476	0.125
3700.000	1.135	295.001	3699.331	6.332	-49.401	6.332	49.805	277.304	0.104
3800.000	1.046	282.154	3799.313	6.943	-51.191	6.943	51.660	277.723	0.260
3900.000	0.986	291.864	3899.297	7.455	-52.882	7.455	53.405	278.024	0.182
4000.000	1.140	277.978	3999.280	7.914	-54.666	7.914	55.235	278.237	0.299
4100.000	1.249	291.291	4099.259	8.447	-56.666	8.447	57.292	278.479	0.298
4200.000	1.277	287.846	4199.234	9.185	-58.742	9.185	59.456	278.887	0.081
4300.000	1.199	273.114	4299.211	9.583	-60.848	9.583	61.598	278.950	0.327
4400.000	1.238	290.969	4399.189	10.026	-62.901	10.026	63.695	279.057	0.380
4500.000	1.378	280.973	4499.163	10.642	-65.090	10.642	65.954	279.285	0.267
4600.000	1.288	313.817	4599.138	11.649	-67.082	11.649	68.086	279.851	0.759
4700.000	1.354	291.241	4699.112	12.855	-68.994	12.855	70.182	280.555	0.521
4800.000	1.337	278.016	4799.084	13.446	-71.251	13.446	72.509	280.687	0.310
4900.000	1.021	271.898	4899.063	13.638	-73.297	13.638	74.555	280.541	0.340
5000.000	0.804	269.148	4999.050	13.658	-74.888	13.658	76.123	280.336	0.221
5100.000	0.717	278.724	5099.042	13.742	-76.207	13.742	77.437	280.222	0.153
5200.000	0.644	281.034	5199.035	13.944	-77.377	13.944	78.624	280.216	0.078
5300.000	0.866	287.539	5299.026	14.280	-78.650	14.280	79.935	280.291	0.238
5400.000	0.623	295.396	5399.017	14.741	-79.862	14.741	81.211	280.458	0.263
5500.000	0.463	324.057	5499.013	15.301	-80.590	15.301	82.030	280.750	0.310
5600.000	0.923	329.270	5599.005	16.321	-81.239	16.321	82.862	281.359	0.464
5700.000	0.985	311.825	5698.992	17.587	-82.291	17.587	84.150	282.063	0.296
5800.000	0.894	268.318	5798.979	18.137	-83.712	18.137	85.654	282.225	0.702
5900.000	1.000	327.606	5898.968	18.851	-84.959	18.851	87.025	282.510	0.941
6000.000	0.602	331.829	5998.958	20.051	-85.675	20.051	87.990	283.172	0.402
6100.000	0.861	319.312	6098.950	21.084	-86.412	21.084	88.947	283.712	0.303
6200.000	0.776	330.478	6198.940	22.243	-87.236	22.243	90.027	284.304	0.180
6300.000	0.536	302.421	6298.933	23.083	-87.964	23.083	90.942	284.703	0.394
6400.000	0.378	330.450	6398.930	23.621	-88.522	23.621	91.619	284.940	0.269
6500.000	0.444	304.180	6498.928	24.126	-89.006	24.126	92.217	285.166	0.198
6600.000	0.724	343.523	6598.923	24.949	-89.505	24.949	92.917	285.575	0.473
6700.000	0.424	317.721	6698.918	25.828	-89.933	25.828	93.568	286.024	0.389
6800.000	0.520	337.655	6798.915	26.521	-90.354	26.521	94.166	286.358	0.189
6900.000	0.258	5.581	6898.912	27.165	-90.505	27.165	94.494	286.707	0.317
7000.000	0.309	297.431	6998.911	27.513	-90.722	27.513	94.803	286.871	0.320
7100.000	0.244	344.766	7098.910	27.843	-91.018	27.843	95.181	287.009	0.230
7200.000	0.251	24.423	7198.909	28.248	-90.983	28.248	95.268	287.248	0.168
7300.000	0.369	21.298	7298.908	28.747	-90.776	28.747	95.219	287.572	0.119
7400.000	0.112	86.643	7398.907	29.053	-90.561	29.053	95.107	287.787	0.338
7500.000	0.630	36.135	7498.905	29.503	-90.140	29.503	94.845	288.123	0.565
7600.000	0.768	4.915	7598.898	30.614	-89.758	30.614	94.835	288.833	0.399
7650.000	0.693	25.625	7648.894	31.220	-89.599	31.220	94.882	289.211	0.545
HORIZONTAL DISPLACEMENT IS 94.882 FEET AT 289.211 DEGREES									