



Company: Anadarko Petroleum Corp.
 Well/API: HSR-Barron 15-35/05-123-16539
 Tool Type: North Seeking Rate Gyro
 Rig Name: Production/ Summit
 County/State: Weld County / Colorado
 VS-Azi: 0.000 Degrees
 Latitude: 40.26372, Longitude: -104.85545
 All Azimuths referenced to True North
 No Grid Convergence Applied



Depth Reference : RKB = GL Elevation = 4750'

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: run2-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 3/12/2018 / 12:49

Lat/Long Obtained By Handheld GPS At Wellhead

Handheld GPS Reference: NAD83/Device Error: ±9 Feet

VES Survey International - Commerce City, CO

Surveyor: Jay Hinman/HSR-Barron 15-35/API 05-123-16539

303-853-4976

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	0.563	17.200	99.998	0.469	0.145	0.469	0.491	17.200	0.563
200.000	0.540	327.850	199.994	1.337	0.040	1.337	1.337	1.708	0.461
300.000	0.485	349.348	299.990	2.151	-0.289	2.151	2.171	352.351	0.198
400.000	0.513	349.266	399.987	3.007	-0.450	3.007	3.040	351.479	0.028
500.000	0.187	242.026	499.985	3.369	-0.678	3.369	3.437	348.620	0.596
600.000	0.345	180.762	599.984	2.992	-0.827	2.992	3.104	344.556	0.303
700.000	0.419	90.380	699.983	2.688	-0.465	2.688	2.728	350.190	0.545
800.000	0.077	266.004	799.982	2.681	-0.166	2.681	2.687	356.448	0.496
900.000	0.428	139.994	899.981	2.391	0.006	2.391	2.391	0.153	0.478
1000.000	0.449	139.730	999.978	1.805	0.500	1.805	1.873	15.483	0.022
1100.000	0.464	153.679	1099.975	1.143	0.933	1.143	1.476	39.217	0.112
1200.000	0.213	62.943	1199.974	0.865	1.278	0.865	1.544	55.903	0.513
1300.000	0.196	166.371	1299.973	0.784	1.485	0.784	1.679	62.171	0.322
1400.000	0.306	328.655	1399.973	0.845	1.386	0.845	1.623	58.625	0.496
1500.000	0.109	189.350	1499.973	0.979	1.232	0.979	1.573	51.523	0.395
1600.000	0.381	279.464	1599.972	0.939	0.888	0.939	1.293	43.384	0.397
1700.000	0.682	283.408	1699.967	1.132	-0.019	1.132	1.132	359.032	0.302
1800.000	0.765	303.006	1799.960	1.634	-1.158	1.634	2.002	324.676	0.260

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
1900.000	1.428	276.209	1899.941	2.132	-2.956	2.132	3.645	305.802	0.821
2000.000	1.655	273.709	1999.905	2.360	-5.635	2.360	6.110	292.727	0.237
2100.000	1.606	269.177	2099.865	2.434	-8.477	2.434	8.819	286.019	0.138
2200.000	1.698	250.386	2199.824	1.916	-11.273	1.916	11.435	279.647	0.547
2300.000	1.849	238.186	2299.776	0.568	-14.040	0.568	14.052	272.318	0.406
2400.000	1.898	238.233	2399.723	-1.154	-16.819	-1.154	16.859	266.074	0.049
2500.000	1.899	237.595	2499.668	-2.914	-19.626	-2.914	19.841	261.555	0.021
2600.000	1.993	235.173	2599.610	-4.795	-22.452	-4.795	22.959	257.945	0.124
2700.000	1.847	234.255	2699.554	-6.729	-25.188	-6.729	26.071	255.042	0.149
2800.000	1.510	233.135	2799.511	-8.461	-27.550	-8.461	28.820	252.927	0.339
2900.000	1.554	232.795	2899.475	-10.072	-29.684	-10.072	31.346	251.258	0.046
3000.000	1.540	239.208	2999.439	-11.580	-31.919	-11.580	33.954	250.060	0.174
3100.000	1.672	257.864	3099.400	-12.575	-34.500	-12.575	36.720	249.974	0.537
3200.000	1.725	260.119	3199.356	-13.140	-37.410	-13.140	39.650	250.647	0.085
3300.000	2.081	260.143	3299.301	-13.709	-40.681	-13.709	42.929	251.377	0.355
3400.000	2.163	259.877	3399.232	-14.351	-44.328	-14.351	46.593	252.060	0.083
3500.000	2.121	273.146	3499.163	-14.581	-48.033	-14.581	50.197	253.113	0.497
3600.000	1.938	278.684	3599.101	-14.225	-51.552	-14.225	53.478	254.574	0.268
3700.000	1.930	279.452	3699.044	-13.693	-54.884	-13.693	56.566	255.991	0.027
3800.000	1.723	280.958	3798.993	-13.131	-58.021	-13.131	59.488	257.248	0.212
3900.000	1.530	280.288	3898.952	-12.606	-60.811	-12.606	62.103	258.288	0.194
4000.000	0.919	276.149	3998.929	-12.282	-62.921	-12.282	64.108	258.955	0.617
4100.000	0.947	283.213	4098.916	-12.007	-64.522	-12.007	65.630	259.458	0.118
4200.000	1.035	276.159	4198.901	-11.722	-66.224	-11.722	67.254	259.963	0.150
4300.000	1.128	273.920	4298.883	-11.557	-68.104	-11.557	69.077	260.368	0.102
4400.000	0.982	284.945	4398.866	-11.269	-69.914	-11.269	70.816	260.843	0.249
4500.000	1.065	290.078	4498.850	-10.729	-71.615	-10.729	72.414	261.480	0.124
4600.000	1.097	294.289	4598.833	-10.016	-73.361	-10.016	74.041	262.225	0.085
4700.000	0.631	280.139	4698.821	-9.526	-74.775	-9.526	75.379	262.740	0.509
4800.000	0.681	265.728	4798.814	-9.473	-75.909	-9.473	76.498	262.887	0.172
4900.000	0.550	254.965	4898.809	-9.642	-76.965	-9.642	77.567	262.859	0.175
5000.000	0.818	253.843	4998.802	-9.965	-78.114	-9.965	78.747	262.730	0.269
5100.000	0.520	247.033	5098.795	-10.341	-79.218	-10.341	79.890	262.563	0.308
5200.000	0.254	247.924	5198.792	-10.601	-79.842	-10.601	80.543	262.437	0.266
5300.000	0.170	287.665	5298.792	-10.640	-80.189	-10.640	80.891	262.442	0.165
5400.000	0.141	192.683	5398.791	-10.715	-80.357	-10.715	81.068	262.405	0.230
5500.000	0.665	205.260	5498.789	-11.359	-80.631	-11.359	81.428	261.981	0.529
5600.000	1.462	207.810	5598.771	-13.013	-81.474	-13.013	82.507	260.926	0.798
5700.000	1.075	192.654	5698.746	-15.056	-82.275	-15.056	83.641	259.630	0.509
5800.000	0.813	240.985	5798.734	-16.315	-83.101	-16.315	84.687	258.893	0.809

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
5900.000	1.095	226.468	5898.720	-17.318	-84.414	-17.318	86.172	258.407	0.369
6000.000	0.618	269.845	5998.710	-17.977	-85.647	-17.977	87.513	258.146	0.773
6100.000	0.808	283.469	6098.702	-17.815	-86.872	-17.815	88.680	258.411	0.254
6200.000	1.042	270.224	6198.689	-17.647	-88.467	-17.647	90.210	258.719	0.316
6300.000	1.113	287.357	6298.671	-17.354	-90.303	-17.354	91.955	259.122	0.328
6400.000	1.111	246.990	6398.654	-17.443	-92.122	-17.443	93.759	259.278	0.767
6500.000	1.416	254.544	6498.630	-18.151	-94.205	-18.151	95.938	259.094	0.346
6600.000	1.161	239.797	6598.605	-18.990	-96.271	-18.990	98.126	258.841	0.416
6700.000	1.312	210.690	6698.582	-20.484	-97.731	-20.484	99.855	258.162	0.638
6800.000	1.465	201.231	6798.553	-22.661	-98.778	-22.661	101.344	257.079	0.275
6900.000	1.523	222.013	6898.520	-24.840	-100.131	-24.840	103.166	256.067	0.542
7000.000	1.394	221.857	6998.487	-26.734	-101.832	-26.734	105.283	255.290	0.129
7100.000	0.858	211.439	7098.468	-28.279	-103.035	-28.279	106.845	254.652	0.572