

Company: Anadarko Petroleum Corp.
 Well/API: HSR- Houston B6-16/05-123-19106
 Tool Type: North Seeking Rate Gyro
 Rig Name: Production/ CoreTech
 County/State: Weld/Colorado
 Latitude: 40.227, Longitude: -104.898
 Directions are relative to True North
 VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB= GL Elevation= 4764 Feet

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 10/14/2014 / 18:27

Lat/Long Obtained by Handheld GPS at Wellhead

Handheld GPS Reference: NAD83/ Device Error: +- 9 Feet

VES Survey International- Henderson Co

Sean Bratt
 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	0.473	233.947	99.999	-0.243	-0.334	-0.243	0.413	233.947	0.473
200.000	0.101	223.129	199.997	-0.550	-0.728	-0.550	0.912	232.908	0.374
300.000	0.299	182.063	299.997	-0.875	-0.797	-0.875	1.184	222.327	0.233
400.000	0.037	194.386	399.996	-1.167	-0.815	-1.167	1.424	214.905	0.263
500.000	0.187	196.684	499.996	-1.355	-0.869	-1.355	1.610	212.688	0.149
600.000	0.316	226.381	599.995	-1.701	-1.116	-1.701	2.034	213.260	0.179
700.000	0.394	214.634	699.993	-2.174	-1.510	-2.174	2.647	214.793	0.106
800.000	0.752	202.044	799.988	-3.065	-1.952	-3.065	3.634	212.492	0.378
900.000	0.850	207.459	899.978	-4.331	-2.540	-4.331	5.021	210.391	0.123
1000.000	0.914	220.224	999.967	-5.599	-3.398	-5.599	6.549	211.251	0.206
1100.000	0.925	214.385	1099.954	-6.874	-4.369	-6.874	8.145	212.437	0.094
1200.000	1.024	225.580	1199.939	-8.166	-5.463	-8.166	9.825	213.782	0.214
1300.000	0.941	248.982	1299.925	-9.086	-6.867	-9.086	11.389	217.083	0.407
1400.000	0.908	280.380	1399.913	-9.237	-8.413	-9.237	12.494	222.326	0.501
1500.000	0.635	279.966	1499.903	-8.999	-9.738	-8.999	13.259	227.261	0.272
1600.000	0.318	323.168	1599.900	-8.680	-10.451	-8.680	13.586	230.289	0.458
1700.000	0.436	6.727	1699.898	-8.080	-10.573	-8.080	13.307	232.614	0.300
1800.000	0.940	354.657	1799.891	-6.885	-10.605	-6.885	12.644	237.007	0.522
1900.000	1.041	29.744	1899.877	-5.279	-10.231	-5.279	11.512	242.705	0.605
2000.000	1.299	11.806	1999.856	-3.381	-9.548	-3.381	10.129	250.503	0.445
2100.000	1.590	18.294	2099.824	-0.954	-8.880	-0.954	8.931	263.870	0.333
2200.000	1.726	33.526	2199.783	1.618	-7.613	1.618	7.783	282.001	0.460
2300.000	1.720	28.381	2299.738	4.194	-6.068	4.194	7.377	304.652	0.155
2400.000	1.775	23.978	2399.691	6.930	-4.725	6.930	8.388	325.710	0.145
2500.000	1.672	17.315	2499.646	9.738	-3.662	9.738	10.403	339.391	0.225
2600.000	1.760	16.440	2599.601	12.603	-2.793	12.603	12.909	347.503	0.091
2700.000	1.773	21.779	2699.554	15.512	-1.785	15.512	15.614	353.436	0.165
2800.000	1.650	16.006	2799.509	18.332	-0.814	18.332	18.350	357.457	0.212
2900.000	1.829	20.379	2899.463	21.211	0.138	21.211	21.211	0.374	0.222
3000.000	1.459	23.243	2999.422	23.876	1.197	23.876	23.906	2.869	0.378
3100.000	1.385	349.943	3099.393	26.237	1.488	26.237	26.279	3.246	0.818
3200.000	1.147	329.956	3199.369	28.293	0.776	28.293	28.304	1.571	0.498
3300.000	0.880	327.366	3299.353	29.806	-0.139	29.806	29.806	359.732	0.271
3400.000	0.373	240.893	3399.348	30.294	-0.838	30.294	30.306	358.415	0.934

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	1.102	194.393	3499.340	29.204	-1.362	29.204	29.236	357.330	0.888
3600.000	1.530	173.170	3599.314	26.947	-1.442	26.947	26.985	356.936	0.641
3700.000	1.372	188.955	3699.282	24.439	-1.470	24.439	24.483	356.558	0.428
3800.000	1.556	200.407	3799.250	21.984	-2.130	21.984	22.087	354.467	0.345
3900.000	1.483	196.279	3899.215	19.470	-2.966	19.470	19.695	351.339	0.132
4000.000	1.066	203.229	3999.190	17.374	-3.695	17.374	17.762	347.993	0.444
4100.000	0.873	214.277	4099.175	15.890	-4.491	15.890	16.512	344.218	0.268
4200.000	0.753	218.762	4199.165	14.748	-5.331	14.748	15.682	340.126	0.136
4300.000	0.800	196.218	4299.156	13.566	-5.937	13.566	14.808	336.362	0.307
4400.000	0.862	190.540	4399.146	12.156	-6.270	12.156	13.678	332.717	0.103
4500.000	0.858	196.556	4499.135	10.700	-6.621	10.700	12.583	328.252	0.090
4600.000	0.903	180.726	4599.123	9.195	-6.844	9.195	11.462	323.339	0.246
4700.000	0.746	175.817	4699.113	7.758	-6.806	7.758	10.321	318.738	0.172
4800.000	0.246	199.923	4799.109	6.907	-6.832	6.907	9.715	315.310	0.531
4900.000	0.435	187.722	4899.107	6.328	-6.957	6.328	9.404	312.291	0.201
5000.000	0.317	226.552	4999.105	5.761	-7.209	5.761	9.228	308.631	0.274
5100.000	0.417	225.494	5099.103	5.316	-7.669	5.316	9.331	304.727	0.100
5200.000	0.460	214.390	5199.100	4.729	-8.156	4.729	9.427	300.108	0.095
5300.000	0.578	168.653	5299.096	3.903	-8.283	3.903	9.156	295.228	0.418
5400.000	0.492	185.807	5399.092	2.980	-8.227	2.980	8.750	289.914	0.181
5500.000	0.908	247.204	5499.085	2.246	-9.001	2.246	9.277	284.012	0.799
5600.000	0.837	213.820	5599.074	1.333	-10.138	1.333	10.225	277.489	0.506
5700.000	1.075	183.334	5699.061	-0.211	-10.599	-0.211	10.601	268.862	0.553
5800.000	1.087	145.418	5799.045	-1.928	-10.115	-1.928	10.297	259.208	0.702
5900.000	1.910	142.716	5899.009	-4.035	-8.567	-4.035	9.470	244.781	0.826
6000.000	1.509	150.128	5998.965	-6.503	-6.902	-6.503	9.483	226.706	0.457
6100.000	0.663	174.474	6098.946	-8.221	-6.190	-8.221	10.291	216.981	0.945
6200.000	0.586	279.012	6198.943	-8.717	-6.640	-8.717	10.957	217.298	0.989
6300.000	0.661	297.539	6298.937	-8.370	-7.656	-8.370	11.343	222.451	0.214
6400.000	0.977	285.832	6398.927	-7.870	-8.988	-7.870	11.947	228.794	0.356
6500.000	0.843	280.185	6498.914	-7.508	-10.533	-7.508	12.935	234.520	0.161
6600.000	1.127	272.996	6598.899	-7.326	-12.240	-7.326	14.265	239.098	0.310
6700.000	1.192	283.962	6698.879	-7.024	-14.232	-7.024	15.871	243.733	0.231
6800.000	0.220	275.188	6798.870	-6.755	-15.433	-6.755	16.847	246.361	0.975
6900.000	0.136	173.776	6898.870	-6.856	-15.611	-6.856	17.051	246.291	0.281
7000.000	0.180	104.544	6998.870	-7.013	-15.447	-7.013	16.964	245.581	0.183
HORIZONTAL DISPLACEMENT IS 16.964 FEET AT 245.581 DEGREES									