

Company: Anadarko Petroleum Corp.
 Well/API: Deems 1 / 05-123-09134
 Tool Type: North Seeking Rate Gyro
 Rig Name: Production / Coretech
 County/State: Weld County / Colorado
 VS-Azi: 0.000 Degrees
 Latitude: 40.14748, Longitude: -104.85571
 No Grid Convergence Applied
 All Azimuths referenced to True North



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB = GL Elevation = 4899 Feet

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut
 Minimum Curvature Method
 Report Date/Time: 6/8/2015 / 07:31

Lat/Long Obtained By Handheld GPS At Wellhead
 Handheld GPS Reference: NAD83/Device Error: ±9 Feet
 VES Survey International - Henderson CO
 Norman Cowan
 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	0.490	118.488	99.999	-0.204	0.376	-0.204	0.428	118.488	0.490
200.000	0.567	123.747	199.995	-0.683	1.163	-0.683	1.349	120.414	0.090
300.000	0.751	102.607	299.988	-1.101	2.214	-1.101	2.473	116.433	0.302
400.000	0.744	104.124	399.980	-1.402	3.483	-1.402	3.754	111.928	0.021
500.000	0.600	88.247	499.973	-1.544	4.636	-1.544	4.886	108.425	0.234
600.000	0.613	84.488	599.967	-1.477	5.691	-1.477	5.880	104.548	0.042
700.000	0.521	90.420	699.962	-1.429	6.678	-1.429	6.829	102.078	0.109
800.000	0.506	91.415	799.958	-1.443	7.574	-1.443	7.710	100.788	0.017
900.000	0.434	101.055	899.955	-1.527	8.387	-1.527	8.525	100.317	0.107
1000.000	0.355	118.114	999.952	-1.745	9.032	-1.745	9.199	100.938	0.140
1100.000	0.242	144.843	1099.951	-2.064	9.427	-2.064	9.651	102.352	0.177
1200.000	0.223	188.882	1199.950	-2.429	9.519	-2.429	9.824	104.316	0.175
1300.000	0.185	190.110	1299.950	-2.780	9.461	-2.780	9.861	106.377	0.038
1400.000	0.256	194.447	1399.949	-3.155	9.377	-3.155	9.894	108.599	0.072
1500.000	0.327	209.195	1499.948	-3.620	9.182	-3.620	9.870	111.518	0.103
1600.000	0.258	248.823	1599.947	-3.950	8.833	-3.950	9.677	114.094	0.208
1700.000	0.590	267.276	1699.944	-4.056	8.110	-4.056	9.067	116.572	0.355
1800.000	0.664	281.845	1799.938	-3.962	7.029	-3.962	8.068	119.407	0.175
1900.000	0.860	275.978	1899.929	-3.765	5.716	-3.765	6.844	123.370	0.211
2000.000	1.059	286.705	1999.915	-3.421	4.085	-3.421	5.328	129.946	0.268
2100.000	1.038	278.373	2099.898	-3.023	2.304	-3.023	3.801	142.696	0.154
2200.000	1.131	280.238	2199.880	-2.716	0.436	-2.716	2.751	170.874	0.100
2300.000	1.112	280.609	2299.861	-2.362	-1.488	-2.362	2.792	212.215	0.021
2400.000	0.961	276.593	2399.845	-2.087	-3.275	-2.087	3.883	237.486	0.167
2500.000	0.895	276.098	2499.832	-1.908	-4.884	-1.908	5.243	248.660	0.066
2600.000	0.737	268.971	2599.822	-1.837	-6.304	-1.837	6.566	253.756	0.187
2700.000	0.758	269.668	2699.813	-1.852	-7.608	-1.852	7.831	256.319	0.022
2800.000	0.737	266.840	2799.805	-1.891	-8.912	-1.891	9.110	258.018	0.043
2900.000	0.672	266.115	2899.797	-1.966	-10.139	-1.966	10.328	259.023	0.066
3000.000	0.684	263.681	2999.790	-2.072	-11.317	-2.072	11.505	259.625	0.031
3100.000	0.715	266.757	3099.783	-2.173	-12.533	-2.173	12.720	260.164	0.049
3200.000	0.584	253.710	3199.776	-2.351	-13.645	-2.351	13.846	260.224	0.197

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
3300.000	0.607	269.711	3299.771	-2.497	-14.663	-2.497	14.874	260.338	0.167
3400.000	0.421	261.275	3399.767	-2.555	-15.556	-2.555	15.765	260.673	0.200
3500.000	0.422	219.065	3499.764	-2.897	-16.151	-2.897	16.409	259.833	0.304
3600.000	0.505	229.308	3599.761	-3.470	-16.717	-3.470	17.074	258.275	0.117
3700.000	0.399	218.843	3699.758	-4.028	-17.270	-4.028	17.733	256.871	0.134
3800.000	0.448	232.254	3799.755	-4.538	-17.797	-4.538	18.367	255.694	0.110
3900.000	0.494	262.223	3899.752	-4.836	-18.534	-4.836	19.154	255.376	0.248
4000.000	0.400	251.690	3999.749	-5.004	-19.293	-5.004	19.931	255.459	0.125
4100.000	0.480	259.920	4099.746	-5.187	-20.037	-5.187	20.698	255.486	0.101
4200.000	0.456	270.849	4199.743	-5.255	-20.847	-5.255	21.499	255.853	0.092
4300.000	0.683	273.119	4299.738	-5.216	-21.840	-5.216	22.454	256.567	0.228
4400.000	0.805	283.425	4399.729	-5.021	-23.118	-5.021	23.657	257.747	0.180
4500.000	0.819	285.812	4499.719	-4.663	-24.489	-4.663	24.929	259.219	0.037
4600.000	0.874	290.536	4599.708	-4.201	-25.891	-4.201	26.230	260.784	0.089
4700.000	0.815	293.208	4699.697	-3.653	-27.259	-3.653	27.503	262.367	0.071
4800.000	0.785	279.595	4799.688	-3.258	-28.588	-3.258	28.773	263.497	0.192
4900.000	0.815	282.299	4899.678	-2.993	-29.958	-2.993	30.108	264.295	0.048
5000.000	0.823	276.581	4999.668	-2.759	-31.367	-2.759	31.488	264.973	0.082
5100.000	0.816	284.215	5099.658	-2.502	-32.770	-2.502	32.866	265.634	0.109
5200.000	0.517	298.466	5199.651	-2.112	-33.857	-2.112	33.923	266.430	0.340
5300.000	0.687	296.963	5299.645	-1.626	-34.787	-1.626	34.825	267.325	0.171
5400.000	0.383	291.925	5399.641	-1.229	-35.632	-1.229	35.653	268.025	0.307
5500.000	0.500	325.825	5499.638	-0.743	-36.187	-0.743	36.194	268.823	0.281
5600.000	0.315	344.101	5599.635	-0.118	-36.507	-0.118	36.507	269.815	0.224
5700.000	0.257	359.632	5699.634	0.371	-36.584	0.371	36.586	270.581	0.096
5800.000	0.269	66.416	5799.633	0.689	-36.370	0.689	36.376	271.085	0.290
5900.000	0.207	25.701	5899.633	0.946	-36.076	0.946	36.088	271.502	0.176
6000.000	0.354	84.574	5999.632	1.139	-35.689	1.139	35.708	271.827	0.304
6100.000	0.281	82.876	6099.630	1.198	-35.138	1.198	35.158	271.953	0.074
6200.000	0.448	77.633	6199.628	1.312	-34.513	1.312	34.538	272.177	0.170
6300.000	0.856	84.046	6299.621	1.473	-33.389	1.473	33.421	272.527	0.414
6350.000	0.602	66.464	6349.617	1.617	-32.777	1.617	32.817	272.824	0.671

HORIZONTAL DISPLACEMENT IS

32.817 FEET AT 272.824 DEGREES