

Company: Anadarko Petroleum Corp.
 Well/API: GNB W 31-6 D/05-123-20824
 Tool Type: North Seeking Rate Gyro
 Rig Name: Production / Coretech
 County/State: Weld/Colorado
 Latitude: 40.096, Longitude: -104.821
 Directions are relative to True North
 VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB = GL Elevation = 4888 Ft

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 7/14/2014 / 15:19

Lat/Long & Elevation 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	0.304	61.412	100.000	0.127	0.233	0.127	0.265	61.412	0.304
200.000	0.450	358.200	199.998	0.646	0.453	0.646	0.789	35.053	0.414
300.000	0.840	340.390	299.991	1.728	0.195	1.728	1.739	6.429	0.434
400.000	1.476	351.865	399.970	3.694	-0.233	3.694	3.701	356.383	0.674
500.000	2.141	343.161	499.920	6.757	-0.957	6.757	6.824	351.939	0.718
600.000	2.802	347.868	599.827	10.934	-2.012	10.934	11.117	349.575	0.690
700.000	3.575	352.515	699.671	16.415	-2.931	16.415	16.675	349.875	0.815
800.000	4.010	359.114	799.453	23.003	-3.392	23.003	23.252	351.612	0.615
900.000	4.020	358.504	899.207	30.003	-3.537	30.003	30.211	353.276	0.044
1000.000	3.608	356.757	998.986	36.649	-3.807	36.649	36.846	354.070	0.428
1100.000	3.595	354.164	1098.788	42.909	-4.304	42.909	43.124	354.273	0.163
1200.000	3.221	351.755	1198.611	48.808	-5.025	48.808	49.066	354.122	0.401
1300.000	3.140	349.187	1298.457	54.278	-5.942	54.278	54.602	353.753	0.164
1400.000	2.926	348.709	1398.317	59.471	-6.955	59.471	59.876	353.329	0.216
1500.000	2.939	349.954	1498.186	64.498	-7.902	64.498	64.980	353.015	0.065
1600.000	2.711	343.379	1598.065	69.289	-9.026	69.289	69.874	352.578	0.395
1700.000	2.586	340.832	1697.958	73.686	-10.443	73.686	74.423	351.933	0.172
1800.000	2.038	338.907	1797.876	77.476	-11.824	77.476	78.373	351.323	0.554
1900.000	1.795	339.388	1897.820	80.601	-13.015	80.601	81.645	350.827	0.244
2000.000	1.588	324.814	1997.777	83.199	-14.365	83.199	84.430	350.204	0.476
2100.000	1.553	314.804	2097.740	85.287	-16.125	85.287	86.798	349.293	0.276
2200.000	1.489	304.367	2197.705	86.975	-18.159	86.975	88.851	348.207	0.284
2300.000	1.521	296.121	2297.670	88.293	-20.423	88.293	90.624	346.976	0.219
2400.000	1.762	293.278	2397.629	89.485	-23.027	89.485	92.400	345.569	0.254
2500.000	1.711	283.589	2497.583	90.443	-25.890	90.443	94.076	344.026	0.298
2600.000	1.289	275.457	2597.549	90.901	-28.461	90.901	95.252	342.615	0.472
2700.000	1.444	277.502	2697.521	91.172	-30.830	91.172	96.244	341.317	0.163
2800.000	1.258	275.196	2797.493	91.436	-33.172	91.436	97.267	340.060	0.194
2900.000	1.174	271.986	2897.470	91.571	-35.289	91.571	98.136	338.924	0.108
3000.000	0.944	264.506	2997.453	91.528	-37.133	91.528	98.773	337.918	0.268
3100.000	0.770	263.913	3097.442	91.378	-38.621	91.378	99.204	337.089	0.173
3200.000	0.916	262.419	3197.431	91.201	-40.082	91.201	99.620	336.275	0.147
3300.000	0.915	242.825	3297.419	90.731	-41.584	90.731	99.806	335.377	0.312

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
3400.000	0.776	236.771	3397.408	89.995	-42.861	89.995	99.680	334.533	0.165
3500.000	0.818	231.395	3497.398	89.179	-43.985	89.179	99.436	333.746	0.085
3600.000	0.859	233.297	3597.387	88.285	-45.144	88.285	99.158	332.918	0.050
3700.000	0.471	218.097	3697.380	87.514	-45.998	87.514	98.866	332.273	0.423
3800.000	0.239	154.046	3797.379	87.003	-46.161	87.003	98.490	332.051	0.425
3900.000	0.245	156.236	3897.378	86.620	-45.984	86.620	98.069	332.038	0.011
4000.000	0.309	166.046	3997.377	86.163	-45.833	86.163	97.595	331.990	0.079
4100.000	0.933	213.428	4097.371	85.222	-46.216	85.222	96.947	331.529	0.758
4200.000	0.994	236.155	4197.357	84.060	-47.385	84.060	96.496	330.590	0.384
4300.000	1.287	213.796	4297.338	82.644	-48.729	82.644	95.941	329.475	0.528
4400.000	0.666	210.562	4397.323	81.210	-49.650	81.210	95.185	328.559	0.623
4500.000	0.573	191.995	4497.317	80.220	-50.050	80.220	94.553	328.040	0.220
4600.000	0.717	230.666	4597.311	79.335	-50.637	79.335	94.118	327.451	0.448
4700.000	1.631	250.178	4697.289	78.456	-52.460	78.456	94.379	326.231	0.985
4800.000	1.660	249.589	4797.248	77.468	-55.157	77.468	95.097	324.549	0.034
4900.000	2.340	241.944	4897.187	76.002	-58.316	76.002	95.797	322.501	0.728
5000.000	2.214	226.092	4997.109	73.702	-61.509	73.702	95.997	320.153	0.640
5100.000	2.712	224.275	5097.016	70.668	-64.553	70.668	95.714	317.589	0.504
5200.000	2.565	219.647	5196.910	67.251	-67.633	67.251	95.378	314.838	0.259
5300.000	2.382	218.066	5296.817	63.892	-70.342	63.892	95.027	312.249	0.196
5400.000	2.260	222.249	5396.735	60.797	-72.949	60.797	94.962	309.808	0.209
5500.000	1.839	229.328	5496.671	58.291	-75.491	58.291	95.377	307.674	0.490
5600.000	1.766	232.724	5596.621	56.312	-77.935	56.312	96.150	305.850	0.129
5700.000	1.690	237.255	5696.576	54.581	-80.401	54.581	97.178	304.171	0.156
5800.000	1.540	244.522	5796.536	53.205	-82.855	53.205	98.467	302.707	0.254
5900.000	1.435	252.459	5896.503	52.250	-85.262	52.250	99.998	301.501	0.231
6000.000	1.576	263.545	5996.468	51.718	-87.823	51.718	101.919	300.493	0.323
6100.000	1.413	274.251	6096.434	51.655	-90.419	51.655	104.134	299.739	0.323
6200.000	1.713	273.609	6196.397	51.840	-93.141	51.840	106.596	299.099	0.301
6300.000	1.422	283.918	6296.360	52.233	-95.838	52.233	109.147	298.591	0.404
6400.000	1.573	289.510	6396.326	52.990	-98.336	52.990	111.705	298.319	0.210
6500.000	1.430	278.482	6496.291	53.632	-100.864	53.632	114.237	298.001	0.322
6600.000	0.872	276.516	6596.271	53.903	-102.854	53.903	116.123	297.658	0.560
6700.000	1.145	286.682	6696.255	54.276	-104.567	54.276	117.814	297.432	0.326
6800.000	0.621	300.509	6796.243	54.838	-105.991	54.838	119.337	297.356	0.562
6900.000	1.029	289.930	6896.233	55.419	-107.303	55.419	120.769	297.315	0.434
7000.000	0.907	284.942	6996.218	55.929	-108.912	55.929	122.433	297.182	0.149
7100.000	1.229	310.547	7096.202	56.831	-110.491	56.831	124.250	297.219	0.568
7200.000	0.826	298.705	7196.185	57.874	-111.938	57.874	126.014	297.340	0.453
7300.000	0.885	309.273	7296.174	58.709	-113.168	58.709	127.490	297.419	0.168
7400.000	1.080	313.647	7396.160	59.848	-114.447	59.848	129.151	297.606	0.209
7500.000	0.839	325.825	7496.146	61.104	-115.540	61.104	130.703	297.872	0.314
7600.000	0.794	329.307	7596.135	62.306	-116.306	62.306	131.943	298.178	0.067
7700.000	1.024	329.342	7696.123	63.671	-117.115	63.671	133.304	298.531	0.230
7800.000	1.079	314.268	7796.106	65.097	-118.245	65.097	134.979	298.834	0.281
7850.000	1.042	322.007	7846.098	65.784	-118.862	65.784	135.852	298.962	0.296
HORIZONTAL DISPLACEMENT IS 135.852 FEET AT 298.962 DEGREES									