

Company: Anadarko Petroleum Corp.  
 Well/API: HSR-Sawdy 14-36 / 05-123-15439  
 Tool Type: North Seeking Rate Gyro  
 Rig Name: Production / Coretech  
 County/State: Weld / Colorado  
 Latitude: 40.263, Longitude: -104.727  
 Directions are relative to True North  
 VS-Azi: 0.000 Degrees



**FIELD COPY ONLY (NOT DEFINITIVE)**

Depth Reference : RKB = GL Elevation = 4859 Feet

**DRILLOG MS GYRO SURVEY CALCULATIONS**

Filename: msgyro\_run01-01-de\_01\_mrg.ut

Minimum Curvature Method

Report Date/Time: 9/16/2014 / 15:22

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	0.489	352.646	99.999	0.423	-0.055	0.423	0.427	352.646	0.489
200.000	0.476	4.315	199.995	1.260	-0.078	1.260	1.263	356.457	0.099
300.000	0.110	8.315	299.994	1.769	-0.033	1.769	1.770	358.936	0.365
400.000	0.376	343.293	399.993	2.179	-0.113	2.179	2.182	357.022	0.280
500.000	0.479	27.138	499.990	2.866	-0.017	2.866	2.866	359.655	0.333
600.000	0.433	26.685	599.987	3.575	0.343	3.575	3.591	5.478	0.046
700.000	0.307	12.794	699.985	4.174	0.572	4.174	4.213	7.800	0.153
800.000	0.510	24.878	799.982	4.839	0.819	4.839	4.908	9.601	0.220
900.000	0.345	359.511	899.980	5.545	1.003	5.545	5.635	10.257	0.248
1000.000	0.347	1.776	999.978	6.149	1.010	6.149	6.231	9.330	0.014
1100.000	0.216	356.820	1099.977	6.639	1.009	6.639	6.716	8.642	0.133
1200.000	0.207	14.465	1199.976	7.002	1.044	7.002	7.080	8.478	0.066
1300.000	0.105	16.836	1299.976	7.265	1.115	7.265	7.350	8.728	0.102
1400.000	0.221	329.230	1399.975	7.518	1.043	7.518	7.591	7.900	0.169
1500.000	0.280	335.725	1499.974	7.906	0.844	7.906	7.951	6.096	0.065
1600.000	0.394	313.733	1599.973	8.366	0.496	8.366	8.381	3.393	0.170
1700.000	0.460	318.264	1699.970	8.903	-0.019	8.903	8.903	359.876	0.074
1800.000	0.339	303.733	1799.967	9.367	-0.532	9.367	9.382	356.748	0.157
1900.000	0.308	320.625	1899.966	9.739	-0.949	9.739	9.785	354.437	0.100
2000.000	0.435	13.285	1999.964	10.316	-1.032	10.316	10.368	354.288	0.349
2100.000	0.342	4.036	2099.962	10.984	-0.924	10.984	11.022	355.193	0.112
2200.000	0.779	43.948	2199.957	11.771	-0.431	11.771	11.779	357.904	0.561
2300.000	0.795	46.715	2299.947	12.736	0.546	12.736	12.748	2.457	0.041
2400.000	0.930	54.053	2399.936	13.689	1.709	13.689	13.795	7.116	0.174
2500.000	0.803	71.942	2499.925	14.383	3.032	14.383	14.699	11.905	0.298
2600.000	0.716	97.308	2599.916	14.520	4.318	14.520	15.149	16.562	0.344
2700.000	0.616	82.013	2699.910	14.515	5.470	14.515	15.512	20.649	0.203
2800.000	0.506	65.493	2799.905	14.773	6.403	14.773	16.101	23.435	0.194
2900.000	0.426	66.995	2899.902	15.101	7.147	15.101	16.708	25.328	0.080
3000.000	0.440	65.257	2999.899	15.408	7.839	15.408	17.287	26.965	0.019
3100.000	0.953	66.946	3099.891	15.894	8.953	15.894	18.242	29.392	0.513
3200.000	0.385	84.606	3199.884	16.251	10.052	16.251	19.109	31.739	0.598
3300.000	0.767	193.246	3299.881	15.631	10.233	15.631	18.683	33.211	0.962

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	0.951	209.034	3399.870	14.254	9.677	14.254	17.228	34.172	0.298
3500.000	1.090	204.344	3499.854	12.662	8.882	12.662	15.466	35.049	0.162
3600.000	1.285	206.738	3599.832	10.794	7.985	10.794	13.427	36.494	0.201
3700.000	1.152	213.424	3699.810	8.954	6.927	8.954	11.321	37.728	0.194
3800.000	0.924	235.559	3799.793	7.659	5.708	7.659	9.552	36.699	0.457
3900.000	1.107	253.755	3899.778	6.932	4.116	6.932	8.062	30.699	0.368
4000.000	1.414	254.396	3999.754	6.330	2.000	6.330	6.639	17.534	0.308

HORIZONTAL DISPLACEMENT IS 6.639 FEET AT 17.534 DEGREES									
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