

Company: ANADARKO PETROLEUM

Well: FOURWAY 12-16

API: 05-123-20013

Rig Name: PRODUCTION/ CORE-TECH

State/County: COLORADO / WELD

Latitude: 40.140, Longitude: -104.676

Directions are relative to True North

VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB = GROUND LEVEL

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 4/25/2014 / 13:12

VAUGHN ENERGY SERVICES

HENDERSON, COLORADO

303-853-4976

NICK KULA

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	0.910	89.009	99.996	0.014	0.794	0.014	0.794	89.009	0.910
200.000	0.966	99.116	199.982	-0.106	2.421	-0.106	2.423	92.509	0.174
300.000	1.187	92.481	299.965	-0.285	4.289	-0.285	4.298	93.796	0.254
400.000	1.038	79.549	399.946	-0.165	6.215	-0.165	6.217	91.521	0.291
500.000	0.599	77.582	499.936	0.112	7.617	0.112	7.617	89.160	0.440
600.000	0.563	57.997	599.931	0.484	8.544	0.484	8.557	86.755	0.201
700.000	0.317	70.283	699.928	0.838	9.220	0.838	9.258	84.808	0.262
800.000	0.140	71.666	799.927	0.970	9.597	0.970	9.646	84.230	0.177
900.000	0.198	105.717	899.926	0.962	9.880	0.962	9.927	84.441	0.113
1000.000	0.165	170.620	999.926	0.773	10.070	0.773	10.100	85.610	0.197
1100.000	0.111	52.801	1099.926	0.690	10.171	0.690	10.194	86.119	0.238
1200.000	0.096	228.841	1199.926	0.694	10.185	0.694	10.209	86.104	0.207
1300.000	0.393	335.927	1299.925	0.952	9.982	0.952	10.028	84.553	0.431
1400.000	0.283	347.210	1399.923	1.506	9.788	1.506	9.903	81.250	0.128
1500.000	0.472	293.973	1499.921	1.915	9.357	1.915	9.551	78.434	0.378
1600.000	0.569	311.975	1599.917	2.414	8.611	2.414	8.944	74.338	0.189
1700.000	0.399	293.672	1699.914	2.887	7.923	2.887	8.433	69.983	0.228
1800.000	0.470	293.377	1799.911	3.189	7.229	3.189	7.901	66.196	0.071
1900.000	0.464	302.065	1899.907	3.567	6.509	3.567	7.422	61.280	0.071
2000.000	0.800	307.016	1999.901	4.202	5.608	4.202	7.008	53.157	0.340
2100.000	0.862	319.114	2099.891	5.191	4.558	5.191	6.908	41.286	0.186
2200.000	0.849	308.734	2199.880	6.224	3.488	6.224	7.134	29.266	0.155
2300.000	1.189	305.911	2299.864	7.296	2.069	7.296	7.584	15.836	0.343
2400.000	1.132	314.785	2399.843	8.600	0.528	8.600	8.616	3.515	0.188
2500.000	1.467	307.088	2499.817	10.068	-1.194	10.068	10.138	353.236	0.377
2600.000	1.656	309.030	2599.780	11.750	-3.338	11.750	12.215	344.141	0.196
2700.000	1.609	293.069	2699.740	13.210	-5.752	13.210	14.408	336.470	0.456
2800.000	1.892	296.087	2799.693	14.486	-8.526	14.486	16.809	329.519	0.298
2900.000	2.108	295.561	2899.632	16.005	-11.668	16.005	19.807	323.908	0.216

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
3000.000	2.132	296.785	2999.564	17.637	-14.987	17.637	23.144	319.643	0.051
3100.000	1.951	301.418	3099.501	19.362	-18.100	19.362	26.505	316.930	0.245
3200.000	2.009	305.267	3199.441	21.262	-20.984	21.262	29.873	315.377	0.145
3300.000	1.900	299.747	3299.383	23.096	-23.855	23.096	33.204	314.075	0.218
3400.000	1.875	305.678	3399.329	24.873	-26.623	24.873	36.434	313.054	0.197
3500.000	1.757	296.465	3499.279	26.510	-29.323	26.510	39.530	312.115	0.314
3600.000	1.299	303.293	3599.243	27.815	-31.643	27.815	42.130	311.317	0.492
3700.000	1.131	292.651	3699.221	28.817	-33.501	28.817	44.190	310.702	0.280
3800.000	0.693	285.479	3799.208	29.359	-34.995	29.359	45.679	309.995	0.453
3900.000	0.638	299.914	3899.201	29.798	-36.060	29.798	46.779	309.568	0.176
4000.000	0.339	296.836	3999.197	30.209	-36.807	30.209	47.617	309.378	0.300
4100.000	0.378	333.705	4099.195	30.639	-37.217	30.639	48.206	309.462	0.230
4200.000	0.398	320.362	4199.193	31.202	-37.585	31.202	48.848	309.698	0.092
4300.000	0.583	312.626	4299.189	31.814	-38.181	31.814	49.698	309.802	0.196
4400.000	0.760	311.449	4399.183	32.597	-39.052	32.597	50.869	309.852	0.178
4500.000	0.939	310.714	4499.172	33.570	-40.170	33.570	52.351	309.886	0.179
4600.000	0.688	291.409	4599.162	34.324	-41.350	34.324	53.740	309.695	0.368
4700.000	0.546	269.538	4699.156	34.539	-42.386	34.539	54.677	309.176	0.273
4800.000	1.011	292.610	4799.147	34.875	-43.677	34.875	55.892	308.606	0.552
4900.000	1.182	324.335	4899.129	36.052	-45.093	36.052	57.733	308.643	0.622
5000.000	1.347	349.497	4999.106	38.045	-45.909	38.045	59.624	309.649	0.574
5100.000	1.441	2.385	5099.076	40.457	-46.070	40.457	61.313	311.288	0.326
5200.000	1.543	8.716	5199.042	43.043	-45.814	43.043	62.862	313.214	0.194
5300.000	1.359	356.663	5299.010	45.558	-45.679	45.558	64.515	314.924	0.355
5400.000	1.101	351.050	5398.987	47.691	-45.898	47.691	66.189	316.098	0.285
5500.000	0.848	359.246	5498.973	49.380	-46.057	49.380	67.525	316.995	0.288
5600.000	0.665	16.945	5598.964	50.676	-45.897	50.676	68.371	317.833	0.295
5700.000	0.815	14.323	5698.956	51.920	-45.552	51.920	69.070	318.738	0.153
5800.000	0.838	23.110	5798.946	53.281	-45.089	53.281	69.799	319.760	0.129
5900.000	1.195	33.171	5898.930	54.827	-44.232	54.827	70.445	321.105	0.398
6000.000	1.000	28.990	5998.911	56.463	-43.238	56.463	71.117	322.556	0.211
6100.000	1.069	26.517	6098.895	58.061	-42.399	58.061	71.894	323.861	0.082
6200.000	0.996	27.468	6198.879	59.666	-41.582	59.666	72.726	325.127	0.075
6300.000	1.108	24.607	6298.862	61.317	-40.778	61.317	73.638	326.374	0.124
6400.000	0.995	39.230	6398.845	62.868	-39.826	62.868	74.422	327.646	0.290
6500.000	0.944	40.729	6498.831	64.165	-38.740	64.165	74.953	328.878	0.057
6600.000	0.925	41.477	6598.818	65.394	-37.668	65.394	75.467	330.057	0.023
6700.000	1.031	40.006	6698.803	66.687	-36.556	66.687	76.049	331.270	0.109
6800.000	1.031	33.276	6798.787	68.128	-35.484	68.128	76.815	332.488	0.121
6900.000	1.114	40.732	6898.769	69.617	-34.356	69.617	77.633	333.734	0.162
7000.000	1.474	25.042	6998.744	71.519	-33.177	71.519	78.840	335.114	0.502
7100.000	1.973	27.872	7098.699	74.206	-31.828	74.206	80.744	336.785	0.506
7200.000	2.438	29.584	7198.624	77.578	-29.973	77.578	83.167	338.876	0.469
7300.000	3.068	26.802	7298.508	81.816	-27.716	81.816	86.383	341.285	0.644
7400.000	3.350	32.111	7398.352	86.679	-24.957	86.679	90.200	343.938	0.410
7500.000	2.476	32.150	7498.221	90.983	-22.254	90.983	93.665	346.256	0.875
7550.000	2.302	24.617	7548.178	92.810	-21.261	92.810	95.214	347.097	0.716

HORIZONTAL DISPLACEMENT IS
95.214 FEET AT 347.097 DEGREES