

COMPANY/RIG: Noble Energy/Production/Coretech

WELL/API: CPC Mark 35-1/05-123-12886

DECLINATION: 8.36

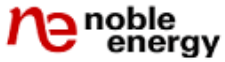
TD AS DRILLED: 7181

COUNTY/STATE: Weld/Colorado

Latitude: 40.273, Longitude: -104.627

GRID North is 0.560 Degrees East of True North

VS-Azi: 0.000 Degrees



DEPTH REFERENCE : RKB = Ground Elevation = 4750

## DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro run-de\_01.ut

Minimum Curvature Method

Report Date/Time: 8/20/2014 / 16:04

LAT &amp; LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

SURVEYOR: JUSTIN WILLIAMS

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	0.502	90.004	99.999	0.000	0.438	0.000	0.438	90.004	0.502
200.000	0.531	117.483	199.995	-0.214	1.287	-0.214	1.305	99.434	0.247
300.000	0.551	133.268	299.990	-0.757	2.049	-0.757	2.184	110.286	0.150
400.000	0.529	134.445	399.986	-1.410	2.728	-1.410	3.071	117.329	0.025
500.000	0.446	179.856	499.983	-2.122	3.058	-2.122	3.722	124.756	0.384
600.000	0.260	213.102	599.981	-2.702	2.935	-2.702	3.989	132.627	0.269
700.000	0.369	235.437	699.979	-3.075	2.546	-3.075	3.992	140.377	0.162
800.000	0.198	285.205	799.978	-3.212	2.114	-3.212	3.845	146.657	0.285
900.000	0.234	304.087	899.978	-3.053	1.778	-3.053	3.533	149.782	0.079
1000.000	0.286	314.541	999.977	-2.764	1.432	-2.764	3.113	152.616	0.070
1100.000	0.280	324.194	1099.975	-2.391	1.111	-2.391	2.636	155.076	0.048
1200.000	0.218	280.965	1199.974	-2.156	0.781	-2.156	2.293	160.080	0.192
1300.000	0.387	244.761	1299.973	-2.264	0.289	-2.264	2.283	172.720	0.248
1400.000	0.226	211.875	1399.972	-2.575	-0.120	-2.575	2.578	182.676	0.233
1500.000	0.214	311.193	1499.971	-2.619	-0.365	-2.619	2.645	187.936	0.336
1600.000	0.110	301.456	1599.971	-2.446	-0.588	-2.446	2.516	193.515	0.108
1700.000	0.349	276.260	1699.970	-2.363	-0.973	-2.363	2.555	202.375	0.254
1800.000	0.340	244.201	1799.968	-2.459	-1.543	-2.459	2.903	212.107	0.191
1900.000	0.195	32.632	1899.968	-2.445	-1.718	-2.445	2.988	215.103	0.517
2000.000	0.579	33.694	1999.965	-1.881	-1.346	-1.881	2.313	215.593	0.384

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
2100.000	1.121	49.051	2099.954	-0.819	-0.327	-0.819	0.882	201.759	0.583
2200.000	1.054	57.577	2199.936	0.315	1.188	0.315	1.229	75.155	0.175
2300.000	1.020	30.341	2299.920	1.576	2.414	1.576	2.883	56.857	0.489
2400.000	1.008	73.038	2399.906	2.601	3.705	2.601	4.527	54.928	0.738
2500.000	1.381	80.950	2499.884	3.048	5.736	3.048	6.496	62.020	0.406
2600.000	2.157	77.846	2599.836	3.633	8.766	3.633	9.489	67.487	0.782
2700.000	2.394	75.291	2699.757	4.560	12.626	4.560	13.424	70.143	0.257
2800.000	2.745	86.363	2799.657	5.242	17.035	5.242	17.823	72.896	0.606
2900.000	3.055	76.932	2899.529	5.996	22.020	5.996	22.822	74.767	0.568
3000.000	2.627	84.226	2999.406	6.829	26.896	6.829	27.749	75.753	0.559
3100.000	2.506	84.587	3099.306	7.266	31.353	7.266	32.184	76.952	0.122
3200.000	2.188	94.637	3199.223	7.318	35.431	7.318	36.179	78.330	0.519
3300.000	1.653	109.521	3299.167	6.682	38.693	6.682	39.266	80.202	0.727
3400.000	1.178	137.814	3399.137	5.439	40.742	5.439	41.104	82.397	0.831
3500.000	0.946	180.898	3499.121	3.852	41.419	3.852	41.598	84.687	0.809
3600.000	0.688	229.670	3599.112	2.638	40.949	2.638	41.034	86.314	0.714
3700.000	0.969	272.232	3699.103	2.282	39.646	2.282	39.711	86.706	0.656
3800.000	1.056	280.161	3799.087	2.478	37.893	2.478	37.974	86.259	0.165
3900.000	0.946	277.163	3899.072	2.743	36.166	2.743	36.270	85.662	0.122
4000.000	1.095	273.824	3999.056	2.910	34.394	2.910	34.517	85.164	0.160
4100.000	0.896	272.166	4099.041	3.003	32.659	3.003	32.796	84.746	0.201
4200.000	0.771	257.969	4199.030	2.893	31.219	2.893	31.353	84.707	0.241
4300.000	0.556	266.465	4299.023	2.722	30.077	2.722	30.200	84.828	0.236
4400.000	0.953	276.591	4399.015	2.788	28.767	2.788	28.901	84.464	0.417
4500.000	0.846	294.487	4499.002	3.189	27.269	3.189	27.454	83.329	0.299
4600.000	0.830	256.847	4598.992	3.331	25.892	3.331	26.105	82.670	0.541
4700.000	0.799	253.399	4698.982	2.967	24.518	2.967	24.697	83.101	0.058
4800.000	0.919	236.032	4798.971	2.319	23.185	2.319	23.301	84.287	0.285
4900.000	0.982	231.022	4898.958	1.332	21.854	1.332	21.895	86.511	0.105
5000.000	0.645	221.124	4998.947	0.369	20.818	0.369	20.821	88.984	0.365
5100.000	0.956	208.684	5098.938	-0.786	20.048	-0.786	20.063	92.245	0.355
5200.000	0.736	207.931	5198.927	-2.085	19.346	-2.085	19.458	96.152	0.220
5300.000	0.781	215.638	5298.918	-3.207	18.648	-3.207	18.922	99.758	0.111
5400.000	0.721	212.371	5398.909	-4.293	17.914	-4.293	18.421	103.477	0.074
5500.000	0.475	235.029	5498.904	-5.062	17.237	-5.062	17.965	106.366	0.337
5600.000	0.684	233.569	5598.899	-5.654	16.417	-5.654	17.364	109.004	0.210
5700.000	0.811	238.861	5698.890	-6.375	15.331	-6.375	16.604	112.578	0.145
5800.000	0.867	259.460	5798.880	-6.879	13.981	-6.879	15.582	116.199	0.305
5900.000	0.777	248.238	5898.869	-7.269	12.608	-7.269	14.553	119.965	0.184
6000.000	0.799	243.605	5998.860	-7.830	11.354	-7.830	13.792	124.591	0.067
6100.000	0.316	254.111	6098.855	-8.215	10.465	-8.215	13.304	128.134	0.491
6200.000	0.673	265.703	6198.851	-8.335	9.614	-8.335	12.724	130.924	0.369

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
6300.000	0.113	225.789	6298.848	-8.448	8.957	-8.448	12.312	133.324	0.590
6400.000	0.338	182.168	6398.848	-8.811	8.875	-8.811	12.506	134.794	0.267
6500.000	0.479	162.679	6498.845	-9.505	8.988	-9.505	13.082	136.601	0.196
6600.000	0.694	123.969	6598.840	-10.243	9.615	-10.243	14.049	136.810	0.439
6700.000	0.333	137.227	6698.836	-10.795	10.315	-10.795	14.931	136.301	0.378
6800.000	0.309	146.211	6798.835	-11.232	10.662	-11.232	15.487	136.490	0.056
6900.000	0.795	117.714	6898.830	-11.778	11.426	-11.778	16.410	135.870	0.544
6950.000	0.801	140.141	6948.825	-12.208	11.957	-12.208	17.088	135.595	0.621