



Company/Rig: Noble Energy/ CoreTech
WELL/API#: Pauline PJ 5/05-123-25616
DECLINATION: 8.27 Degrees
TD AS DRILLED: 6995 Feet
COUNTY/STATE: Weld/Colorado
VS-Azi: 0.000 Degrees
Latitude: 40.40930, Longitude: -104.57883
Grid North = True North -0.60 degs (NAD 27)
Grid Correction Applied = -0.60 degs



DEPTH REFERENCE : RKB=GL/ ELEVATION= 4592 Feet

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 12/1/2015 / 10:39

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: Sean Bratt / Pauline PJ 5

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	0.899	46.701	99.996	0.538	0.571	0.538	0.785	46.701	0.899
200.000	0.910	31.747	199.984	1.752	1.561	1.752	2.346	41.689	0.236
300.000	0.680	15.630	299.974	2.999	2.138	2.999	3.684	35.488	0.319
400.000	0.690	27.393	399.967	4.105	2.575	4.105	4.846	32.101	0.141
500.000	0.451	339.866	499.962	5.010	2.717	5.010	5.699	28.470	0.509
600.000	0.360	7.691	599.960	5.691	2.623	5.691	6.266	24.746	0.214
700.000	0.123	11.639	699.959	6.107	2.687	6.107	6.672	23.745	0.238
800.000	0.374	300.451	799.958	6.378	2.427	6.378	6.824	20.836	0.354
900.000	0.053	348.835	899.957	6.589	2.137	6.589	6.927	17.972	0.340
1000.000	0.334	291.063	999.957	6.739	1.856	6.739	6.990	15.398	0.309
1100.000	0.124	6.752	1099.956	6.952	1.597	6.952	7.133	12.935	0.327
1200.000	0.532	236.216	1199.955	6.801	1.223	6.801	6.910	10.197	0.620
1300.000	0.194	341.548	1299.953	6.703	0.784	6.703	6.749	6.667	0.613
1400.000	0.459	221.251	1399.952	6.563	0.466	6.563	6.580	4.058	0.582
1500.000	0.395	203.892	1499.949	5.947	0.062	5.947	5.947	0.595	0.144
1600.000	0.510	235.281	1599.946	5.378	-0.444	5.378	5.396	355.280	0.269
1700.000	0.263	152.184	1699.945	4.921	-0.703	4.921	4.971	351.869	0.545
1800.000	0.406	199.398	1799.943	4.384	-0.714	4.384	4.442	350.754	0.298

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
1900.000	0.355	117.215	1899.942	3.908	-0.556	3.908	3.948	351.904	0.501
2000.000	0.804	102.573	1999.936	3.614	0.404	3.614	3.636	6.376	0.469
2100.000	0.709	92.458	2099.928	3.435	1.706	3.435	3.835	26.416	0.163
2200.000	0.841	133.569	2199.919	2.903	2.856	2.903	4.072	44.534	0.558
2300.000	0.664	172.962	2299.911	1.822	3.458	1.822	3.909	62.216	0.534
2400.000	0.785	161.934	2399.903	0.596	3.742	0.596	3.789	80.948	0.184
2500.000	0.805	189.072	2499.894	-0.749	3.843	-0.749	3.916	101.029	0.374
2600.000	0.937	193.557	2599.882	-2.238	3.541	-2.238	4.189	122.297	0.148
2700.000	0.992	192.212	2699.868	-3.879	3.166	-3.879	5.007	140.781	0.059
2800.000	1.099	205.356	2799.852	-5.591	2.572	-5.591	6.155	155.296	0.262
2900.000	1.434	214.916	2899.827	-7.484	1.445	-7.484	7.622	169.069	0.396
3000.000	1.597	218.963	2999.792	-9.594	-0.147	-9.594	9.595	180.879	0.195
3100.000	1.785	208.009	3099.749	-12.052	-1.755	-12.052	12.179	188.283	0.373
3200.000	1.906	219.237	3199.697	-14.715	-3.538	-14.715	15.134	193.518	0.381
3300.000	1.996	198.979	3299.641	-17.650	-5.156	-17.650	18.387	196.285	0.692
3400.000	1.510	190.935	3399.594	-20.591	-5.972	-20.591	21.439	196.175	0.543
3500.000	0.921	216.083	3499.571	-22.534	-6.696	-22.534	23.508	196.549	0.782
3600.000	0.669	208.001	3599.562	-23.699	-7.443	-23.699	24.840	197.436	0.275
3700.000	0.850	176.633	3699.553	-24.954	-7.673	-24.954	26.108	197.093	0.446
3800.000	0.719	215.000	3799.544	-26.209	-7.990	-26.209	27.400	196.954	0.530
3900.000	0.722	210.080	3899.537	-27.268	-8.666	-27.268	28.612	197.630	0.062
4000.000	0.658	183.960	3999.530	-28.386	-9.021	-28.386	29.785	197.630	0.318
4100.000	0.427	159.476	4099.525	-29.307	-8.930	-29.307	30.637	196.946	0.322
4200.000	0.335	198.828	4199.523	-29.933	-8.894	-29.933	31.226	196.549	0.271
4300.000	0.529	318.329	4299.522	-29.865	-9.296	-29.865	31.278	197.289	0.753
4400.000	0.514	305.956	4399.517	-29.256	-9.965	-29.256	30.907	198.810	0.113
4500.000	0.635	348.109	4499.513	-28.451	-10.442	-28.451	30.307	200.155	0.428
4600.000	0.912	16.028	4599.504	-27.144	-10.337	-27.144	29.046	200.848	0.460
4700.000	1.206	22.137	4699.487	-25.404	-9.721	-25.404	27.201	200.939	0.315
4800.000	1.704	28.890	4799.454	-23.127	-8.606	-23.127	24.677	200.410	0.526
4900.000	1.828	22.951	4899.407	-20.357	-7.265	-20.357	21.615	199.641	0.220
5000.000	1.907	26.077	4999.354	-17.394	-5.912	-17.394	18.372	198.772	0.129
5100.000	1.455	45.273	5099.311	-15.006	-4.279	-15.006	15.604	195.914	0.716
5200.000	1.420	42.050	5199.280	-13.192	-2.546	-13.192	13.436	190.924	0.088
5300.000	1.203	62.703	5299.254	-11.790	-0.783	-11.790	11.816	183.802	0.517
5400.000	0.844	14.989	5399.240	-10.598	0.340	-10.598	10.603	178.165	0.890
5500.000	0.904	2.250	5499.228	-9.098	0.561	-9.098	9.115	176.471	0.203
5600.000	0.689	320.614	5599.219	-7.845	0.211	-7.845	7.847	178.461	0.601
5700.000	0.422	359.925	5699.215	-7.012	-0.171	-7.012	7.014	181.397	0.450
5800.000	1.098	317.123	5799.206	-5.941	-0.823	-5.941	5.998	187.888	0.838

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
5900.000	1.167	277.830	5899.188	-5.101	-2.484	-5.101	5.674	205.966	0.764
6000.000	1.295	276.826	5999.165	-4.828	-4.616	-4.828	6.679	223.713	0.130
6100.000	1.652	297.568	6099.132	-4.026	-7.015	-4.026	8.089	240.147	0.636
6200.000	1.707	308.294	6199.090	-2.436	-9.462	-2.436	9.771	255.561	0.319
6300.000	1.862	307.981	6299.041	-0.513	-11.912	-0.513	11.923	267.533	0.155
6400.000	1.781	315.041	6398.991	1.587	-14.291	1.587	14.379	276.335	0.239