



Company/Rig: Noble Energy/CoreTech
WELL/API#: Spike State GWS H 36-04/05-123-16043
DECLINATION: 8.29 Degrees
TD AS DRILLED: 7266 Feet
COUNTY/STATE: Weld/Colorado
VS-Azi: 0.000 Degrees
Latitude: 40.18765, Longitude: -104.61949
Grid North = True North -0.57 degs (NAD 27)
Grid Correction Applied = -0.57 degs



DEPTH REFERENCE : RKB=GL Elevation=4812 Feet

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: survey-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 10/27/2015 / 10:02

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: Geof Davis / Spike State GWS H 36-04

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	0.750	222.596	99.997	-0.482	-0.443	-0.482	0.654	222.596	0.750
200.000	0.583	218.046	199.990	-1.364	-1.199	-1.364	1.816	221.323	0.175
300.000	0.419	202.680	299.987	-2.102	-1.654	-2.102	2.675	218.195	0.211
400.000	0.372	210.888	399.984	-2.718	-1.962	-2.718	3.352	215.817	0.073
500.000	0.402	256.306	499.982	-3.080	-2.469	-3.080	3.947	218.717	0.300
600.000	0.381	259.594	599.980	-3.223	-3.137	-3.223	4.498	224.223	0.031
700.000	0.442	273.213	699.977	-3.261	-3.849	-3.261	5.045	229.726	0.115
800.000	0.499	267.821	799.974	-3.256	-4.670	-3.256	5.693	235.110	0.072
900.000	0.543	266.808	899.970	-3.299	-5.578	-3.299	6.481	239.395	0.045
1000.000	0.411	252.897	999.966	-3.431	-6.394	-3.431	7.257	241.780	0.175
1100.000	0.410	252.812	1099.964	-3.643	-7.079	-3.643	7.962	242.772	0.001
1200.000	0.368	279.975	1199.961	-3.693	-7.738	-3.693	8.574	244.488	0.187
1300.000	0.539	270.560	1299.958	-3.633	-8.525	-3.633	9.267	246.922	0.186
1400.000	0.534	269.052	1399.954	-3.636	-9.462	-3.636	10.137	248.982	0.015
1500.000	0.383	273.852	1499.951	-3.621	-10.262	-3.621	10.882	250.564	0.156
1600.000	0.414	301.083	1599.948	-3.412	-10.905	-3.412	11.426	252.625	0.190
1700.000	0.476	300.385	1699.945	-3.016	-11.572	-3.016	11.959	255.394	0.063
1800.000	0.455	285.940	1799.942	-2.696	-12.312	-2.696	12.604	257.647	0.119

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	0.517	350.748	1899.939	-2.142	-12.767	-2.142	12.945	260.477	0.524
2000.000	0.509	34.789	1999.936	-1.332	-12.586	-1.332	12.656	263.960	0.385
2100.000	0.727	55.261	2099.930	-0.606	-11.812	-0.606	11.827	267.064	0.307
2200.000	0.891	77.798	2199.920	-0.080	-10.531	-0.080	10.531	269.564	0.355
2300.000	0.985	72.173	2299.907	0.347	-8.953	0.347	8.960	272.222	0.132
2400.000	1.133	113.945	2399.891	0.209	-7.231	0.209	7.234	271.658	0.768
2500.000	1.312	125.614	2499.868	-0.858	-5.397	-0.858	5.465	260.962	0.306
2600.000	1.277	128.656	2599.843	-2.221	-3.596	-2.221	4.227	238.296	0.077
2700.000	1.121	129.170	2699.821	-3.535	-1.967	-3.535	4.046	209.098	0.157
2800.000	1.152	131.696	2799.801	-4.821	-0.459	-4.821	4.843	185.436	0.059
2900.000	0.934	140.973	2899.785	-6.123	0.805	-6.123	6.176	172.511	0.275
3000.000	0.736	137.124	2999.774	-7.226	1.755	-7.226	7.436	166.351	0.206
3100.000	0.424	149.203	3099.769	-8.014	2.381	-8.014	8.361	163.455	0.333
3200.000	0.179	155.004	3199.767	-8.473	2.636	-8.473	8.874	162.719	0.246
3300.000	0.073	244.553	3299.767	-8.642	2.644	-8.642	9.038	162.986	0.193
3400.000	0.529	343.043	3399.766	-8.228	2.452	-8.228	8.586	163.405	0.545
3500.000	0.971	335.729	3499.757	-7.014	1.969	-7.014	7.285	164.318	0.451
3600.000	1.158	333.523	3599.740	-5.337	1.170	-5.337	5.464	167.631	0.192
3700.000	1.368	351.392	3699.716	-3.253	0.541	-3.253	3.297	170.553	0.443
3800.000	1.267	5.888	3799.690	-0.973	0.476	-0.973	1.083	153.938	0.347
3900.000	1.304	14.092	3899.664	1.230	0.866	1.230	1.504	35.163	0.188
4000.000	1.162	19.851	3999.641	3.287	1.488	3.287	3.608	24.351	0.188
4100.000	0.764	33.831	4099.627	4.795	2.203	4.795	5.277	24.679	0.460
4200.000	0.624	46.209	4199.620	5.725	2.967	5.725	6.448	27.397	0.204
4300.000	0.778	42.637	4299.612	6.601	3.820	6.601	7.627	30.057	0.161
4400.000	0.739	33.930	4399.604	7.636	4.640	7.636	8.936	31.286	0.122
4500.000	0.654	46.737	4499.596	8.563	5.416	8.563	10.132	32.313	0.177
4600.000	0.196	42.057	4599.593	9.081	5.946	9.081	10.854	33.216	0.458
4700.000	0.324	227.956	4699.593	9.018	5.851	9.018	10.750	32.973	0.520
4800.000	0.389	226.557	4799.591	8.596	5.394	8.596	10.148	32.111	0.066
4900.000	0.362	228.321	4899.589	8.152	4.912	8.152	9.517	31.069	0.029
5000.000	0.437	249.117	4999.586	7.806	4.320	7.806	8.922	28.959	0.162
5100.000	0.530	238.216	5099.583	7.427	3.571	7.427	8.241	25.678	0.131
5200.000	0.438	256.160	5199.579	7.092	2.807	7.092	7.627	21.592	0.176
5300.000	0.437	284.792	5299.576	7.098	2.067	7.098	7.393	16.237	0.216
5400.000	0.586	279.109	5399.572	7.276	1.194	7.276	7.373	9.318	0.157
5500.000	0.646	278.948	5499.567	7.445	0.132	7.445	7.446	1.019	0.060
5600.000	0.695	306.094	5599.560	7.889	-0.914	7.889	7.942	353.389	0.318
5700.000	0.779	296.222	5699.552	8.547	-2.014	8.547	8.781	346.739	0.152
5800.000	0.974	292.844	5799.540	9.177	-3.407	9.177	9.789	339.633	0.201

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	1.243	289.376	5899.521	9.867	-5.213	9.867	11.159	332.152	0.277