



COMPANY/RIG: Noble Energy/Production/CoreTech
WELL/API: Vetting PM F 26-2/05-123-14060
DECLINATION: 8.23 Degrees
TD AS DRILLED: 7187 Feet
COUNTY/STATE: Weld/Colorado
VS-Azi: 0.000 Degrees
Latitude: 40.37609, Longitude: -104.62841
Grid North = True North -0.56 degs (NAD 27)
Grid Correction Applied = -0.56 degs



DEPTH REFERENCE : RKB = GL Elevation = 4642

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyrosurvey.ut

Minimum Curvature Method

Report Date/Time: 6/23/2016 / 09:37

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: JUSTIN WILLIAMS / Vetting PM F 26-2

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	0.063	10.868	100.000	0.054	0.010	0.054	0.055	10.868	0.063
200.000	0.243	348.523	200.000	0.315	-0.022	0.315	0.316	356.076	0.187
300.000	0.313	13.043	299.998	0.790	-0.002	0.790	0.790	359.843	0.137
400.000	0.375	45.151	399.997	1.287	0.292	1.287	1.319	12.768	0.199
500.000	0.560	37.147	499.993	1.907	0.819	1.907	2.075	23.236	0.196
600.000	0.586	42.164	599.988	2.676	1.457	2.676	3.047	28.574	0.057
700.000	0.546	44.549	699.983	3.395	2.135	3.395	4.010	32.166	0.047
800.000	0.587	42.062	799.979	4.114	2.812	4.114	4.983	34.352	0.048
900.000	0.498	22.564	899.974	4.896	3.322	4.896	5.916	34.158	0.203
1000.000	0.479	60.362	999.971	5.504	3.852	5.504	6.718	34.988	0.317
1100.000	0.389	43.787	1099.968	5.956	4.451	5.956	7.436	36.770	0.154
1200.000	0.389	56.287	1199.966	6.390	4.968	6.390	8.094	37.866	0.085
1300.000	0.293	60.249	1299.964	6.705	5.472	6.705	8.654	39.219	0.099
1400.000	0.312	63.744	1399.963	6.952	5.938	6.952	9.143	40.502	0.027
1500.000	0.221	33.530	1499.961	7.233	6.289	7.233	9.585	41.005	0.164
1600.000	0.295	42.435	1599.960	7.584	6.569	7.584	10.033	40.898	0.083
1700.000	0.327	11.255	1699.959	8.054	6.798	8.054	10.539	40.169	0.170
1800.000	0.456	342.631	1799.957	8.713	6.735	8.713	11.012	37.705	0.230

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	0.401	340.458	1899.954	9.422	6.499	9.422	11.446	34.598	0.057
2000.000	0.428	320.187	1999.951	10.039	6.143	10.039	11.769	31.463	0.148
2100.000	0.614	293.594	2099.947	10.541	5.412	10.541	11.849	27.178	0.301
2200.000	1.083	276.796	2199.936	10.867	3.982	10.867	11.574	20.125	0.526
2300.000	1.347	262.393	2299.914	10.824	1.879	10.824	10.985	9.847	0.402
2400.000	1.197	265.866	2399.889	10.593	-0.328	10.593	10.598	358.226	0.169
2500.000	1.368	267.210	2499.864	10.459	-2.562	10.459	10.768	346.238	0.173
2600.000	0.979	267.661	2599.843	10.366	-4.608	10.366	11.344	336.036	0.388
2700.000	0.924	283.457	2699.829	10.519	-6.245	10.519	12.233	329.301	0.267
2800.000	0.810	288.573	2799.818	10.932	-7.700	10.932	13.371	324.842	0.137
2900.000	0.658	272.319	2899.810	11.180	-8.944	11.180	14.317	321.342	0.256
3000.000	0.536	286.960	2999.804	11.340	-9.965	11.340	15.096	318.693	0.194
3100.000	0.503	251.825	3099.801	11.339	-10.830	11.339	15.680	316.317	0.315
3200.000	0.716	237.644	3199.795	10.868	-11.775	10.868	16.024	312.706	0.259
3300.000	1.040	249.537	3299.783	10.216	-13.154	10.216	16.655	307.836	0.370
3400.000	1.323	254.688	3399.762	9.594	-15.118	9.594	17.905	302.399	0.302
3500.000	1.361	249.998	3499.734	8.883	-17.347	8.883	19.489	297.114	0.116
3600.000	1.452	249.032	3599.704	8.023	-19.646	8.023	21.221	292.214	0.094
3700.000	1.411	243.130	3699.673	7.013	-21.927	7.013	23.022	287.737	0.153
3800.000	1.596	245.853	3799.639	5.887	-24.296	5.887	24.999	283.621	0.199
3900.000	1.552	252.342	3899.601	4.907	-26.858	4.907	27.302	280.354	0.184
4000.000	1.531	274.907	3999.566	4.610	-29.479	4.610	29.837	278.889	0.603
4100.000	1.530	286.501	4099.530	5.104	-32.090	5.104	32.493	279.037	0.309
4200.000	1.818	267.735	4199.488	5.420	-34.955	5.420	35.373	278.814	0.615
4300.000	2.181	257.774	4299.427	4.955	-38.400	4.955	38.718	277.352	0.501
4400.000	2.652	253.522	4399.338	3.895	-42.478	3.895	42.656	275.240	0.504
4500.000	3.168	248.633	4499.209	2.232	-47.270	2.232	47.323	272.704	0.572
4600.000	3.366	251.475	4599.047	0.293	-52.627	0.293	52.628	270.319	0.256
4700.000	3.246	243.906	4698.881	-1.885	-57.953	-1.885	57.984	268.137	0.452
4800.000	2.834	236.934	4798.740	-4.479	-62.567	-4.479	62.727	265.905	0.553
4900.000	2.031	225.171	4898.650	-7.077	-65.896	-7.077	66.275	263.870	0.941
5000.000	1.256	239.791	4998.608	-8.878	-68.100	-8.878	68.676	262.572	0.875
5100.000	0.634	282.794	5098.595	-9.307	-69.587	-9.307	70.207	262.382	0.903
5200.000	0.448	323.926	5198.591	-8.868	-70.357	-8.868	70.914	262.816	0.418
5300.000	0.572	6.326	5298.588	-8.056	-70.532	-8.056	70.991	263.484	0.387
5400.000	0.586	359.811	5398.582	-7.049	-70.479	-7.049	70.831	264.289	0.067
5500.000	0.692	355.456	5498.576	-5.936	-70.529	-5.936	70.778	265.189	0.117
5600.000	0.673	353.500	5598.569	-4.751	-70.643	-4.751	70.802	266.153	0.030
5700.000	0.829	0.359	5698.561	-3.444	-70.705	-3.444	70.789	267.211	0.180
5800.000	0.973	350.270	5798.548	-1.884	-70.844	-1.884	70.869	268.477	0.214

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	0.995	353.273	5898.533	-0.185	-71.089	-0.185	71.089	269.851	0.056
6000.000	1.112	351.372	5998.517	1.636	-71.336	1.636	71.355	271.314	0.123
6100.000	1.479	6.161	6098.491	3.879	-71.343	3.879	71.449	273.112	0.494
6200.000	1.550	344.276	6198.457	6.464	-71.571	6.464	71.863	275.161	0.579
6300.000	1.732	347.706	6298.416	9.242	-72.259	9.242	72.848	277.289	0.207
6400.000	1.625	343.451	6398.373	12.078	-72.985	12.078	73.978	279.397	0.164
6500.000	2.227	338.334	6498.316	15.243	-74.107	15.243	75.658	281.623	0.625
6600.000	2.296	355.629	6598.239	19.047	-74.977	19.047	77.358	284.254	0.683
6700.000	1.968	20.882	6698.172	22.649	-74.517	22.649	77.883	286.906	0.986
6800.000	1.296	37.842	6798.132	25.146	-73.211	25.146	77.409	288.956	0.820