



COMPANY/RIG: Noble Energy/Production/CoreTech
WELL/API: Nicmoth C 5-19/05-123-24522
DECLINATION: 8.21 Degrees
TD AS DRILLED: 7153 Feet
COUNTY/STATE: Weld/Colorado
VS-Azi: 0.000 Degrees
Latitude: 40.34485, Longitude: -104.57877
Grid North = True North -0.60 degs (NAD 27)
Grid Correction Applied = -0.60 degs



DEPTH REFERENCE : RKB = GL Elevation = 4733

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyrosurvey.ut

Minimum Curvature Method

Report Date/Time: 6/8/2016 / 14:37

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: JUSTIN WILLIAMS / Nicmoth C 5-19

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	0.400	258.272	99.999	-0.071	-0.342	-0.071	0.349	258.272	0.400
200.000	0.183	240.732	199.998	-0.220	-0.823	-0.220	0.852	255.041	0.233
300.000	0.514	234.393	299.996	-0.559	-1.327	-0.559	1.440	247.154	0.333
400.000	0.374	246.577	399.993	-0.950	-1.991	-0.950	2.207	244.494	0.168
500.000	0.741	209.737	499.988	-1.642	-2.612	-1.642	3.085	237.851	0.495
600.000	0.718	187.600	599.980	-2.825	-3.016	-2.825	4.132	226.874	0.281
700.000	1.062	184.814	699.968	-4.370	-3.176	-4.370	5.402	216.015	0.346
800.000	0.974	188.184	799.952	-6.135	-3.375	-6.135	7.002	208.820	0.107
900.000	1.033	160.983	899.938	-7.828	-3.202	-7.828	8.458	202.248	0.476
1000.000	1.047	161.033	999.921	-9.545	-2.611	-9.545	9.896	195.301	0.014
1100.000	0.948	172.047	1099.906	-11.229	-2.200	-11.229	11.442	191.085	0.215
1200.000	0.819	156.019	1199.894	-12.701	-1.795	-12.701	12.828	188.044	0.277
1300.000	0.754	154.087	1299.885	-13.946	-1.217	-13.946	13.999	184.987	0.071
1400.000	0.613	145.556	1399.878	-14.979	-0.627	-14.979	14.992	182.396	0.174
1500.000	0.423	126.224	1499.874	-15.638	-0.027	-15.638	15.638	180.098	0.256
1600.000	0.591	143.254	1599.870	-16.270	0.579	-16.270	16.280	177.960	0.224
1700.000	0.515	114.929	1699.865	-16.873	1.296	-16.873	16.922	175.609	0.281
1800.000	0.582	123.966	1799.861	-17.346	2.125	-17.346	17.475	173.017	0.109

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	0.421	159.095	1899.857	-17.973	2.677	-17.973	18.171	171.528	0.339
2000.000	0.856	214.585	1999.851	-18.931	2.385	-18.931	19.081	172.821	0.708
2100.000	0.999	210.630	2099.838	-20.296	1.516	-20.296	20.353	175.727	0.157
2200.000	0.331	203.912	2199.831	-21.311	0.955	-21.311	21.332	177.434	0.671
2300.000	0.457	112.791	2299.829	-21.729	1.205	-21.729	21.763	176.825	0.570
2400.000	0.632	142.195	2399.825	-22.319	1.911	-22.319	22.401	175.107	0.324
2500.000	0.408	183.183	2499.821	-23.111	2.229	-23.111	23.218	174.491	0.420
2600.000	0.369	183.862	2599.819	-23.788	2.187	-23.788	23.888	174.746	0.039
2700.000	0.399	201.035	2699.817	-24.433	2.041	-24.433	24.519	175.225	0.118
2800.000	0.617	185.558	2799.813	-25.294	1.864	-25.294	25.362	175.785	0.256
2900.000	0.594	206.382	2899.807	-26.294	1.582	-26.294	26.341	176.558	0.220
3000.000	0.997	225.683	2999.798	-27.366	0.729	-27.366	27.376	178.475	0.479
3100.000	1.517	236.182	3099.773	-28.711	-0.994	-28.711	28.728	181.983	0.566
3200.000	1.625	241.577	3199.736	-30.122	-3.341	-30.122	30.307	186.328	0.183
3300.000	1.005	222.479	3299.709	-31.444	-5.180	-31.444	31.868	189.355	0.751
3400.000	0.854	183.541	3399.697	-32.835	-5.818	-32.835	33.346	190.049	0.636
3500.000	0.340	173.182	3499.691	-33.873	-5.829	-33.873	34.371	189.765	0.523
3600.000	0.224	321.025	3599.691	-34.015	-5.917	-34.015	34.526	189.868	0.543
3700.000	0.529	299.362	3699.689	-33.637	-6.442	-33.637	34.249	190.842	0.332
3800.000	0.269	286.754	3799.686	-33.343	-7.070	-33.343	34.084	191.971	0.273
3900.000	0.588	227.199	3899.684	-33.624	-7.671	-33.624	34.488	192.851	0.508
4000.000	1.033	203.173	3999.674	-34.801	-8.402	-34.801	35.801	193.573	0.551
4100.000	1.167	210.104	4099.655	-36.512	-9.268	-36.512	37.669	194.243	0.189
4200.000	1.246	201.773	4199.633	-38.403	-10.182	-38.403	39.730	194.850	0.192
4300.000	1.014	199.784	4299.614	-40.245	-10.885	-40.245	41.691	195.134	0.236
4400.000	0.696	222.345	4399.603	-41.526	-11.594	-41.526	43.114	195.599	0.457
4500.000	0.353	250.703	4499.598	-42.077	-12.293	-42.077	43.836	196.286	0.420
4600.000	0.569	319.819	4599.596	-41.799	-12.905	-41.799	43.746	197.157	0.553
4700.000	0.638	325.200	4699.590	-40.963	-13.543	-40.963	43.143	198.295	0.089
4800.000	1.237	353.294	4799.577	-39.434	-13.987	-39.434	41.841	199.529	0.738
4900.000	1.134	7.765	4899.556	-37.381	-13.979	-37.381	39.910	200.504	0.315
5000.000	0.406	7.529	4999.546	-36.049	-13.799	-36.049	38.600	200.946	0.729
5100.000	0.131	69.897	5099.545	-35.659	-13.645	-35.659	38.180	200.939	0.364
5200.000	0.141	102.166	5199.545	-35.645	-13.417	-35.645	38.087	200.626	0.076
5300.000	0.368	76.628	5299.544	-35.597	-12.984	-35.597	37.891	200.039	0.248
5400.000	0.469	54.057	5399.541	-35.283	-12.340	-35.283	37.379	199.278	0.191
5500.000	0.542	38.863	5499.537	-34.675	-11.713	-34.675	36.599	198.664	0.152
5600.000	0.838	65.025	5599.530	-33.998	-10.753	-33.998	35.658	197.552	0.425
5700.000	0.930	78.168	5699.518	-33.523	-9.296	-33.523	34.788	195.499	0.222
5800.000	1.198	98.809	5799.501	-33.516	-7.468	-33.516	34.338	192.562	0.463

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	1.345	105.159	5899.477	-33.983	-5.303	-33.983	34.395	188.869	0.203
6000.000	1.903	120.181	5999.437	-35.125	-2.735	-35.125	35.231	184.453	0.697
6100.000	1.447	90.569	6099.395	-35.972	-0.038	-35.972	35.972	180.060	0.963
6200.000	0.464	81.346	6199.380	-35.924	1.625	-35.924	35.960	177.410	0.992
6300.000	0.814	347.117	6299.376	-35.171	1.867	-35.171	35.220	176.961	0.966
6400.000	1.427	321.068	6399.357	-33.509	0.926	-33.509	33.522	178.417	0.783
6500.000	1.589	315.926	6499.322	-31.545	-0.821	-31.545	31.555	181.490	0.210
6600.000	1.462	313.288	6599.287	-29.674	-2.714	-29.674	29.798	185.225	0.145
6700.000	1.271	329.287	6699.259	-27.846	-4.209	-27.846	28.162	188.595	0.425
6800.000	0.778	323.274	6799.243	-26.348	-5.181	-26.348	26.852	191.125	0.504
6850.000	0.593	322.153	6849.239	-25.871	-5.543	-25.871	26.459	192.093	0.370