



COMPANY/RIG: Noble Energy/Production/CoreTech
WELL/API: Ocoma UPRR Lease B29-12/05-123-13392
DECLINATION: 8.21 Degrees
TD AS DRILLED: 7102 Feet
COUNTY/STATE: Weld/Colorado
VS-Azi: 0.000 Degrees
Latitude: 40.36826, Longitude: -104.58081
Grid North = True North -0.59 degs (NAD 27)
Grid Correction Applied = -0.59 degs



DEPTH REFERENCE : RKB = GL Elevation = 4719

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyrosurvey.ut

Minimum Curvature Method

Report Date/Time: 7/6/2016 / 08:22

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: JUSTIN WILLIAMS / Ocoma UPRR Lease B29-12

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	0.344	137.451	99.999	-0.221	0.203	-0.221	0.300	137.451	0.344
200.000	0.332	126.953	199.998	-0.617	0.638	-0.617	0.887	134.040	0.063
300.000	0.358	57.342	299.996	-0.622	1.132	-0.622	1.292	118.805	0.394
400.000	0.632	63.230	399.992	-0.205	1.887	-0.205	1.898	96.212	0.279
500.000	0.601	74.316	499.987	0.185	2.885	0.185	2.891	86.332	0.123
600.000	0.572	58.222	599.981	0.590	3.814	0.590	3.859	81.213	0.167
700.000	0.480	55.258	699.977	1.091	4.582	1.091	4.710	76.609	0.096
800.000	0.559	73.544	799.973	1.468	5.394	1.468	5.590	74.780	0.183
900.000	0.569	73.619	899.968	1.746	6.338	1.746	6.574	74.601	0.010
1000.000	0.455	71.773	999.964	2.010	7.192	2.010	7.468	74.385	0.116
1100.000	0.337	57.894	1099.962	2.290	7.818	2.290	8.147	73.671	0.151
1200.000	0.271	54.897	1199.961	2.583	8.261	2.583	8.655	72.638	0.068
1300.000	0.255	52.542	1299.960	2.854	8.631	2.854	9.090	71.702	0.019
1400.000	0.296	71.271	1399.958	3.072	9.052	3.072	9.559	71.252	0.098
1500.000	0.403	71.172	1499.957	3.269	9.629	3.269	10.169	71.250	0.108
1600.000	0.415	76.760	1599.954	3.465	10.314	3.465	10.881	71.431	0.042
1700.000	0.540	87.551	1699.951	3.568	11.138	3.568	11.695	72.237	0.154
1800.000	0.559	105.175	1799.946	3.461	12.080	3.461	12.566	74.015	0.169

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	0.697	113.921	1899.940	3.086	13.107	3.086	13.465	76.750	0.167
2000.000	0.872	119.716	1999.931	2.463	14.323	2.463	14.534	80.245	0.192
2100.000	1.150	121.635	2099.915	1.559	15.839	1.559	15.916	84.380	0.280
2200.000	1.052	118.152	2199.896	0.599	17.503	0.599	17.514	88.040	0.119
2300.000	0.974	110.661	2299.881	-0.134	19.108	-0.134	19.109	90.402	0.154
2400.000	0.991	109.544	2399.866	-0.723	20.718	-0.723	20.731	91.999	0.026
2500.000	1.025	98.607	2499.851	-1.146	22.418	-1.146	22.447	92.928	0.195
2600.000	0.946	70.065	2599.837	-0.999	24.078	-0.999	24.098	92.376	0.492
2700.000	1.089	83.652	2699.821	-0.612	25.798	-0.612	25.806	91.360	0.280
2800.000	0.963	69.844	2799.805	-0.218	27.532	-0.218	27.533	90.453	0.277
2900.000	0.946	62.998	2899.791	0.447	29.057	0.447	29.060	89.119	0.115
3000.000	0.994	82.941	2999.777	0.928	30.653	0.928	30.667	88.265	0.339
3100.000	0.854	110.697	3099.765	0.772	32.211	0.772	32.220	88.628	0.463
3200.000	1.432	131.577	3199.745	-0.321	33.842	-0.321	33.844	90.543	0.703
3300.000	1.933	135.013	3299.701	-2.343	35.969	-2.343	36.046	93.727	0.511
3400.000	2.506	144.795	3399.626	-5.322	38.422	-5.322	38.789	97.887	0.685
3500.000	2.770	141.680	3499.520	-9.005	41.181	-9.005	42.154	102.334	0.301
3600.000	2.921	151.407	3599.397	-13.138	43.899	-13.138	45.823	106.662	0.505
3700.000	3.010	151.592	3699.263	-17.685	46.368	-17.685	49.626	110.877	0.090
3800.000	2.990	156.830	3799.127	-22.392	48.643	-22.392	53.549	114.718	0.275
3900.000	2.818	158.445	3898.998	-27.075	50.572	-27.075	57.363	118.164	0.191
4000.000	2.505	158.958	3998.890	-31.400	52.259	-31.400	60.967	121.000	0.314
4100.000	2.402	166.996	4098.799	-35.482	53.515	-35.482	64.209	123.545	0.359
4200.000	2.146	164.183	4198.720	-39.325	54.497	-39.325	67.204	125.814	0.279
4300.000	1.982	167.196	4298.655	-42.813	55.391	-42.813	70.008	127.702	0.196
4400.000	1.610	168.282	4398.606	-45.876	56.060	-45.876	72.438	129.295	0.374
4500.000	1.605	164.851	4498.566	-48.604	56.711	-48.604	74.689	130.598	0.096
4600.000	1.491	161.380	4598.530	-51.189	57.492	-51.189	76.978	131.680	0.148
4700.000	1.417	165.133	4698.498	-53.617	58.225	-53.617	79.151	132.641	0.120
4800.000	1.643	165.824	4798.462	-56.202	58.893	-56.202	81.407	133.660	0.226
4900.000	0.767	176.873	4898.439	-58.260	59.281	-58.260	83.117	134.502	0.902
5000.000	0.571	186.507	4998.432	-59.423	59.261	-59.423	83.922	135.078	0.225
5100.000	0.578	197.144	5098.427	-60.400	59.056	-60.400	84.473	135.645	0.107
5200.000	0.514	198.294	5198.423	-61.308	58.766	-61.308	84.925	136.213	0.065
5300.000	0.585	208.547	5298.418	-62.183	58.382	-62.183	85.294	136.806	0.121
5400.000	0.419	212.196	5398.414	-62.940	57.943	-62.940	85.550	137.367	0.169
5500.000	0.083	186.702	5498.413	-63.322	57.740	-63.322	85.694	137.640	0.346
5600.000	0.198	100.265	5598.413	-63.424	57.901	-63.424	85.879	137.607	0.210
5700.000	0.760	319.625	5698.410	-62.950	57.641	-62.950	85.353	137.521	0.921
5800.000	2.079	322.531	5798.378	-61.005	56.108	-61.005	82.884	137.394	1.321

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	2.467	315.288	5898.299	-58.037	53.491	-58.037	78.928	137.334	0.482
6000.000	2.467	320.061	5998.206	-54.857	50.595	-54.857	74.627	137.314	0.205
6100.000	2.208	327.667	6098.123	-51.579	48.183	-51.579	70.584	136.949	0.404
6200.000	2.060	321.474	6198.054	-48.546	46.034	-48.546	66.902	136.521	0.274
6300.000	2.008	325.143	6297.991	-45.702	43.913	-45.702	63.380	136.144	0.140
6400.000	1.631	329.023	6397.941	-43.044	42.179	-43.044	60.265	135.581	0.396
6500.000	1.234	344.222	6497.909	-40.788	41.154	-40.788	57.942	134.744	0.546
6600.000	0.866	343.699	6597.892	-39.027	40.649	-39.027	56.351	133.833	0.368
6700.000	0.808	355.651	6697.882	-37.599	40.384	-37.599	55.177	132.955	0.184
6800.000	0.837	344.526	6797.872	-36.193	40.136	-36.193	54.044	132.043	0.162
6850.000	0.638	345.535	6847.867	-35.571	39.969	-35.571	53.505	131.668	0.398