



Company/Rig: NOBLE ENERGY / CORETECH
WELL/API#: COOPER 23-15/05-123-25310
DECLINATION: 8.25 Degrees
TD AS DRILLED: 6970 Feet
COUNTY/STATE: WELD/COLORADO
VS-Azi: 0.000 Degrees
Latitude: 40.47529, Longitude: -104.51260
Grid North = True North -0.64 degs (NAD 27)
Grid Convergence Applied = -0.64 degs



DEPTH REFERENCE : RKB=SURFACE ELEVATION=4652

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 10/14/2015 / 16:22

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: BRIAN BREWBAKER / Cooper 23-15

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	0.064	222.574	100.000	-0.041	-0.038	-0.041	0.056	222.574	0.064
200.000	0.125	263.199	200.000	-0.095	-0.184	-0.095	0.207	242.582	0.087
300.000	0.082	121.185	300.000	-0.145	-0.230	-0.145	0.272	237.790	0.196
400.000	0.157	258.179	400.000	-0.210	-0.303	-0.210	0.369	235.254	0.224
500.000	0.022	150.835	500.000	-0.255	-0.427	-0.255	0.498	239.140	0.165
600.000	0.216	357.072	599.999	-0.084	-0.427	-0.084	0.435	258.823	0.236
700.000	0.118	286.876	699.999	0.133	-0.535	0.133	0.551	283.991	0.208
800.000	0.330	327.634	799.998	0.406	-0.787	0.406	0.886	297.286	0.253
900.000	0.281	292.344	899.997	0.742	-1.168	0.742	1.384	302.437	0.191
1000.000	0.257	308.885	999.996	0.976	-1.569	0.976	1.848	301.888	0.081
1100.000	0.427	324.174	1099.994	1.419	-1.962	1.419	2.422	305.881	0.191
1200.000	0.447	332.694	1199.991	2.068	-2.359	2.068	3.137	311.237	0.068
1300.000	0.522	347.046	1299.988	2.858	-2.640	2.858	3.891	317.273	0.142
1400.000	0.474	345.169	1399.984	3.702	-2.848	3.702	4.671	322.429	0.051
1500.000	0.487	338.195	1499.980	4.497	-3.112	4.497	5.468	325.315	0.060
1600.000	0.450	334.976	1599.977	5.247	-3.436	5.247	6.272	326.782	0.045
1700.000	0.469	333.140	1699.974	5.968	-3.787	5.968	7.068	327.603	0.024
1800.000	0.450	330.331	1799.970	6.673	-4.166	6.673	7.867	328.027	0.029

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	0.553	357.728	1899.967	7.497	-4.379	7.497	8.682	329.710	0.258
2000.000	0.559	357.560	1999.962	8.466	-4.419	8.466	9.550	332.438	0.005
2100.000	0.531	0.392	2099.958	9.417	-4.437	9.417	10.410	334.774	0.038
2200.000	0.508	22.685	2199.954	10.290	-4.262	10.290	11.138	337.499	0.202
2300.000	0.493	33.094	2299.950	11.059	-3.857	11.059	11.712	340.775	0.092
2400.000	0.688	42.433	2399.944	11.863	-3.217	11.863	12.291	344.829	0.217
2500.000	0.590	57.173	2499.938	12.585	-2.379	12.585	12.808	349.296	0.191
2600.000	0.822	50.022	2599.931	13.325	-1.397	13.325	13.398	354.015	0.248
2700.000	0.785	60.495	2699.921	14.123	-0.251	14.123	14.125	358.980	0.151
2800.000	1.175	61.737	2799.906	14.946	1.248	14.946	14.998	4.772	0.391
2900.000	1.436	66.804	2899.880	15.925	3.303	15.925	16.264	11.717	0.285
3000.000	1.326	75.650	2999.851	16.705	5.575	16.705	17.611	18.456	0.240
3100.000	1.140	63.303	3099.828	17.439	7.584	17.439	19.017	23.505	0.323
3200.000	0.805	42.548	3199.814	18.403	8.948	18.403	20.463	25.930	0.481
3300.000	0.819	42.411	3299.804	19.448	9.904	19.448	21.824	26.989	0.014
3400.000	1.065	18.436	3399.791	20.857	10.680	20.857	23.432	27.116	0.460
3500.000	1.220	19.393	3499.771	22.743	11.328	22.743	25.408	26.477	0.156
3600.000	1.257	14.561	3599.747	24.809	11.957	24.809	27.540	25.733	0.111
3700.000	1.334	12.704	3699.722	27.005	12.489	27.005	29.753	24.818	0.088
3800.000	1.311	4.888	3799.695	29.281	12.842	29.281	31.973	23.681	0.182
3900.000	1.404	6.802	3899.667	31.638	13.085	31.638	34.237	22.469	0.103
4000.000	1.373	10.537	3999.638	34.032	13.449	34.032	36.593	21.563	0.096
4100.000	1.447	3.456	4099.608	36.470	13.744	36.470	38.974	20.649	0.189
4200.000	1.389	9.607	4199.577	38.925	14.022	38.925	41.374	19.811	0.163
4300.000	1.689	16.257	4299.541	41.535	14.637	41.535	44.039	19.413	0.349
4400.000	1.856	23.409	4399.493	44.436	15.693	44.436	47.126	19.451	0.277
4500.000	2.160	21.832	4499.432	47.672	17.038	47.672	50.625	19.667	0.309
4600.000	2.674	40.001	4599.344	51.209	19.238	51.209	54.703	20.590	0.917
4700.000	2.481	41.419	4699.243	54.619	22.170	54.619	58.947	22.092	0.203
4800.000	2.244	42.412	4799.157	57.688	24.923	57.688	62.841	23.365	0.241
4900.000	2.248	43.587	4899.081	60.554	27.595	60.554	66.545	24.499	0.046
5000.000	2.264	38.396	4999.003	63.523	30.174	63.523	70.325	25.408	0.205
5100.000	2.076	45.076	5098.932	66.349	32.683	66.349	73.962	26.224	0.315
5200.000	1.817	62.389	5198.875	68.363	35.370	68.363	76.971	27.356	0.639
5300.000	1.726	69.111	5298.827	69.634	38.181	69.634	79.415	28.737	0.227
5400.000	1.906	64.725	5398.777	70.881	41.092	70.881	81.931	30.102	0.228
5500.000	1.810	65.038	5498.724	72.258	44.028	72.258	84.615	31.355	0.097
5600.000	1.535	50.530	5598.682	73.776	46.494	73.776	87.204	32.219	0.503
5700.000	1.386	48.237	5698.650	75.432	48.429	75.432	89.641	32.701	0.160
5800.000	1.297	37.289	5798.622	77.139	50.017	77.139	91.935	32.960	0.271

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	1.287	30.222	5898.597	79.010	51.268	79.010	94.186	32.979	0.160
6000.000	1.286	29.490	5998.572	80.956	52.386	80.956	96.427	32.906	0.017
6100.000	1.336	26.001	6098.546	82.981	53.449	82.981	98.705	32.786	0.095
6200.000	1.338	39.002	6198.519	84.936	54.695	84.936	101.023	32.780	0.303
6300.000	1.197	11.876	6298.495	86.865	55.645	86.865	103.160	32.643	0.610
6400.000	1.267	7.841	6398.472	88.983	56.010	88.983	105.143	32.188	0.112
6500.000	1.289	16.248	6498.447	91.158	56.476	91.158	107.235	31.780	0.189
6600.000	1.498	6.296	6598.418	93.536	56.934	93.536	109.501	31.328	0.319
6700.000	2.161	6.485	6698.366	96.709	57.290	96.709	112.405	30.642	0.664