



Company/Rig: NOBLE ENERGY / PRODUCTION
WELL/API#: CANNON H 35-22/ 05-123-31866
DECLINATION: 8.33 DEGREES
TD AS DRILLED: 7766 FEET
COUNTY/STATE: WELD/ COLORADO
Latitude: 40.181, Longitude: -104.627
GRID North is 0.560 Degrees East of True North
VS-Azi: 0.000 Degrees



DEPTH REFERENCE : RKB=SURFACE ELEVATION=4739 FEET

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 10/15/2014 / 10:07

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

SURVEYOR: NORMAN COWAN

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	0.550	185.262	99.998	-0.478	-0.044	-0.478	0.480	185.262	0.550
200.000	0.659	175.615	199.993	-1.529	-0.044	-1.529	1.529	181.649	0.149
300.000	0.978	155.276	299.983	-2.877	0.357	-2.877	2.899	172.929	0.427
400.000	0.907	161.906	399.969	-4.405	0.960	-4.405	4.508	167.709	0.130
500.000	1.474	163.349	499.947	-6.389	1.574	-6.389	6.581	166.160	0.567
600.000	1.749	185.356	599.909	-9.141	1.800	-9.141	9.317	168.860	0.672
700.000	2.736	228.401	699.837	-12.246	-0.128	-12.246	12.247	180.597	1.884
800.000	2.818	240.735	799.721	-15.033	-4.058	-15.033	15.571	195.105	0.602
900.000	2.880	243.947	899.597	-17.338	-8.459	-17.338	19.291	206.008	0.171
1000.000	2.597	240.152	999.483	-19.569	-12.680	-19.569	23.318	212.943	0.336
1100.000	2.505	237.761	1099.384	-21.862	-16.494	-21.862	27.386	217.033	0.140
1200.000	2.261	239.325	1199.297	-24.034	-20.039	-24.034	31.292	219.821	0.253
1300.000	2.164	240.391	1299.223	-25.974	-23.377	-25.974	34.945	221.989	0.105
1400.000	1.973	241.652	1399.158	-27.724	-26.534	-27.724	38.376	223.744	0.196
1500.000	1.737	238.411	1499.105	-29.335	-29.340	-29.335	41.490	225.005	0.259
1600.000	1.466	248.015	1599.066	-30.608	-31.817	-30.608	44.149	226.110	0.380
1700.000	1.248	256.467	1699.038	-31.341	-34.062	-31.341	46.287	227.382	0.295
1800.000	1.091	267.387	1799.017	-31.640	-36.071	-31.640	47.981	228.744	0.272
1900.000	1.103	280.255	1898.999	-31.512	-37.969	-31.512	49.342	230.310	0.246

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
2000.000	3.116	294.273	1998.927	-30.223	-41.394	-30.223	51.253	233.866	2.063
2100.000	6.810	298.398	2098.535	-26.284	-49.090	-26.284	55.684	241.834	3.709
2200.000	7.593	298.197	2197.745	-20.342	-60.129	-20.342	63.477	251.309	0.783
2300.000	7.511	295.718	2296.878	-14.384	-71.840	-14.384	73.266	258.678	0.336
2400.000	7.328	294.333	2396.041	-8.920	-83.540	-8.920	84.014	263.905	0.256
2500.000	7.455	301.013	2495.212	-2.950	-94.911	-2.950	94.957	268.220	0.868
2600.000	7.264	303.895	2594.388	3.918	-105.719	3.918	105.792	272.123	0.416
2700.000	8.004	305.852	2693.501	11.522	-116.610	11.522	117.178	275.643	0.784
2800.000	7.946	302.525	2792.535	19.316	-128.081	19.316	129.529	278.576	0.465
2900.000	7.792	301.570	2891.593	26.581	-139.685	26.581	142.191	280.774	0.202
3000.000	8.006	298.039	2990.645	33.404	-151.607	33.404	155.244	282.426	0.530
3100.000	7.325	296.117	3089.751	39.484	-163.478	39.484	168.179	283.578	0.727
3200.000	6.609	294.311	3189.012	44.660	-174.447	44.660	180.073	284.360	0.749
3300.000	6.544	292.701	3288.354	49.228	-184.948	49.228	191.388	284.905	0.196
3400.000	5.363	289.389	3387.813	52.979	-194.614	52.979	201.696	285.228	1.229
3500.000	4.109	286.829	3487.470	55.567	-202.452	55.567	209.939	285.348	1.271
3600.000	1.476	304.337	3587.343	57.331	-206.945	57.331	214.740	285.485	2.738
3700.000	0.933	335.865	3687.322	58.801	-208.341	58.801	216.480	285.761	0.837
3800.000	1.008	349.001	3787.308	60.407	-208.842	60.407	217.403	286.132	0.234
3900.000	1.021	343.282	3887.292	62.124	-209.266	62.124	218.293	286.534	0.102
4000.000	0.192	6.312	3987.286	63.143	-209.504	63.143	218.813	286.773	0.848
4100.000	0.165	80.758	4087.285	63.333	-209.343	63.333	218.714	286.832	0.217
4200.000	0.244	126.448	4187.285	63.229	-209.029	63.229	218.383	286.830	0.175
4300.000	0.420	151.172	4287.283	62.782	-208.681	62.782	217.921	286.744	0.223
4400.000	0.172	237.926	4387.282	62.381	-208.632	62.381	217.758	286.647	0.445
4500.000	0.341	238.027	4487.281	62.144	-209.011	62.144	218.054	286.558	0.169
4600.000	0.263	306.913	4587.280	62.124	-209.447	62.124	218.466	286.521	0.347
4700.000	0.646	46.538	4687.278	62.650	-209.221	62.650	218.400	286.670	0.737
4800.000	1.338	65.573	4787.262	63.521	-207.749	63.521	217.243	287.001	0.757
4900.000	1.518	72.061	4887.231	64.411	-205.426	64.411	215.287	287.409	0.242
5000.000	0.869	45.164	4987.210	65.354	-203.628	65.354	213.859	287.794	0.841
5100.000	0.628	39.710	5087.201	66.310	-202.740	66.310	213.309	288.111	0.251
5200.000	0.705	41.265	5187.194	67.194	-201.984	67.194	212.868	288.401	0.079
5300.000	0.821	44.145	5287.185	68.171	-201.080	68.171	212.321	288.728	0.122
5400.000	1.085	59.410	5387.172	69.166	-199.766	69.166	211.401	289.098	0.364
5500.000	0.947	12.924	5487.158	70.454	-198.766	70.454	210.883	289.517	0.812
5600.000	0.942	14.254	5587.144	72.057	-198.379	72.057	211.060	289.962	0.023
5700.000	0.588	352.419	5687.135	73.362	-198.244	73.362	211.383	290.308	0.453
5800.000	0.570	346.456	5787.130	74.355	-198.428	74.355	211.902	290.542	0.063
5900.000	0.569	352.944	5887.125	75.331	-198.606	75.331	212.412	290.772	0.064

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
6000.000	0.145	65.728	5987.123	75.876	-198.552	75.876	212.556	290.914	0.544
6100.000	0.289	103.786	6087.123	75.867	-198.191	75.867	212.216	290.947	0.197
6200.000	0.188	134.202	6187.122	75.693	-197.828	75.693	211.815	290.938	0.159
6300.000	0.307	121.346	6287.121	75.439	-197.482	75.439	211.400	290.907	0.130
6400.000	0.185	116.522	6387.120	75.228	-197.109	75.228	210.977	290.890	0.124
6500.000	0.254	80.684	6487.119	75.192	-196.746	75.192	210.625	290.916	0.150
6600.000	0.385	48.304	6587.118	75.451	-196.277	75.451	210.280	291.027	0.218
6700.000	0.473	51.322	6687.115	75.933	-195.704	75.933	209.918	291.206	0.091
6800.000	1.006	88.321	6787.107	76.216	-194.504	76.216	208.904	291.398	0.689
6900.000	1.832	83.364	6887.075	76.427	-192.040	76.427	206.689	291.701	0.835
7000.000	3.082	67.139	6986.982	77.656	-187.974	77.656	203.383	292.447	1.419
7100.000	2.327	50.108	7086.872	80.002	-183.939	80.002	200.584	293.506	1.095
7200.000	0.976	42.644	7186.828	81.931	-181.805	81.931	199.413	294.259	1.364
7300.000	0.618	59.880	7286.818	82.828	-180.761	82.828	198.834	294.618	0.428
7400.000	0.350	105.058	7386.815	83.020	-180.000	83.020	198.223	294.760	0.447
7450.000	0.372	126.946	7436.814	82.883	-179.723	82.883	197.914	294.758	0.277