



Company/Rig: Noble/ CoreTech  
WELL/API#: WARDLAW 35-24/05-123-21659  
DECLINATION: 8.21 Degrees  
TD AS DRILLED: 6960 Feet  
COUNTY/STATE: WELD/COLORADO  
VS-Azi: 0.000 Degrees  
Latitude: 40.44474, Longitude: -104.51968  
Grid North = True North -0.63 degs (NAD 83)  
Grid Correction Applied = -0.63 degs



Depth Reference : RKB=SURFACE ELEVATION=4622'

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: run1-01-de\_01.ut

Average Angle Method

Report Date/Time: 3/16/2016 / 16:43

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: JAY HINMAN / Wardlaw 35-24

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	0.239	26.484	100.000	0.203	0.048	0.203	0.209	13.242	0.239
200.000	0.619	336.208	199.997	0.952	0.065	0.952	0.955	3.930	0.501
300.000	0.480	297.226	299.992	1.651	-0.592	1.651	1.754	340.259	0.390
400.000	0.312	21.731	399.990	2.299	-0.835	2.299	2.446	340.038	0.547
500.000	0.230	347.237	499.989	2.770	-0.798	2.770	2.883	343.931	0.179
600.000	0.439	233.034	599.987	2.971	-1.346	2.971	3.262	335.630	0.573
700.000	0.378	359.534	699.985	3.287	-1.985	3.287	3.840	328.867	0.730
800.000	0.398	331.874	799.982	3.943	-2.153	3.943	4.492	331.370	0.186
900.000	0.331	255.532	899.980	4.199	-2.735	4.199	5.011	326.923	0.453
1000.000	0.319	25.974	999.979	3.760	-2.376	3.760	4.447	327.708	0.590
1100.000	0.162	56.080	1099.978	4.076	-2.101	4.076	4.586	332.736	0.197
1200.000	0.264	200.419	1199.977	3.846	-1.809	3.846	4.250	334.812	0.407
1300.000	0.191	341.080	1299.976	3.851	-2.206	3.851	4.438	330.195	0.429
1400.000	0.231	131.815	1399.976	3.648	-2.513	3.648	4.429	325.435	0.409
1500.000	0.293	226.700	1499.975	3.191	-2.507	3.191	4.058	321.840	0.388
1600.000	0.184	304.079	1599.974	3.157	-2.922	3.157	4.302	317.216	0.310
1700.000	0.272	298.536	1699.973	3.364	-3.262	3.364	4.686	315.882	0.090
1800.000	0.395	279.376	1799.971	3.553	-3.812	3.553	5.211	312.986	0.164

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	0.523	266.141	1899.968	3.591	-4.612	3.591	5.845	307.909	0.166
2000.000	0.588	250.065	1999.963	3.391	-5.561	3.391	6.513	301.376	0.168
2100.000	0.892	252.897	2099.955	2.981	-6.786	2.981	7.412	293.716	0.305
2200.000	0.868	286.381	2199.943	2.971	-8.322	2.971	8.836	289.649	0.507
2300.000	1.059	277.130	2299.929	3.314	-9.968	3.314	10.505	288.389	0.246
2400.000	1.169	263.760	2399.910	3.329	-11.913	3.329	12.369	285.613	0.281
2500.000	0.826	234.276	2499.895	2.706	-13.538	2.706	13.806	281.302	0.606
2600.000	0.705	226.744	2599.886	1.856	-14.570	1.856	14.687	277.259	0.157
2700.000	0.737	274.806	2699.878	1.441	-15.758	1.441	15.823	275.227	0.588
2800.000	0.442	261.500	2799.873	1.408	-16.785	1.408	16.844	274.796	0.323
2900.000	0.878	262.137	2899.866	1.244	-17.925	1.244	17.968	273.971	0.436
3000.000	0.734	224.306	2999.856	0.611	-19.181	0.611	19.190	271.824	0.540
3100.000	0.584	226.460	3099.850	-0.197	-19.999	-0.197	20.000	269.436	0.151
3200.000	0.827	218.944	3199.842	-1.102	-20.834	-1.102	20.863	266.973	0.259
3300.000	0.903	238.765	3299.831	-2.095	-21.971	-2.095	22.071	264.552	0.307
3400.000	0.231	249.637	3399.826	-2.526	-22.863	-2.526	23.002	263.694	0.678
3500.000	0.264	178.971	3499.825	-2.883	-23.106	-2.883	23.286	262.887	0.288
3600.000	0.164	23.686	3599.824	-2.957	-22.740	-2.957	22.932	262.592	0.419
3700.000	0.100	199.939	3699.824	-3.042	-22.526	-3.042	22.731	262.309	0.264
3800.000	0.296	58.461	3799.823	-3.260	-22.259	-3.260	22.496	261.667	0.379
3900.000	0.286	126.302	3899.822	-3.282	-21.751	-3.282	21.997	261.421	0.325
4000.000	0.351	340.013	3999.821	-3.615	-22.197	-3.615	22.489	260.750	0.611
4100.000	0.459	317.883	4099.818	-3.009	-22.562	-3.009	22.761	262.403	0.188
4200.000	0.454	312.424	4199.815	-2.444	-23.123	-2.444	23.252	263.966	0.044
4300.000	0.307	315.597	4299.813	-1.983	-23.601	-1.983	23.684	265.197	0.148
4400.000	0.366	343.796	4399.811	-1.476	-23.897	-1.476	23.942	266.465	0.174
4500.000	0.817	307.804	4499.806	-0.622	-24.477	-0.622	24.485	268.544	0.564
4600.000	1.079	342.326	4599.792	0.735	-25.425	0.735	25.436	271.655	0.616
4700.000	1.285	18.307	4699.771	2.798	-25.414	2.798	25.567	276.282	0.756
4800.000	1.859	7.935	4799.733	5.470	-24.791	5.470	25.387	282.443	0.638
4900.000	2.190	29.938	4899.671	8.811	-23.644	8.811	25.233	290.438	0.838
5000.000	1.722	55.897	4999.612	11.311	-21.320	11.311	24.135	297.946	0.989
5100.000	1.175	89.711	5099.580	12.058	-18.905	12.058	22.423	302.530	0.992
5200.000	1.224	125.405	5199.558	11.427	-16.910	11.427	20.409	304.049	0.737
5300.000	1.646	133.914	5299.527	9.829	-14.982	9.829	17.918	303.266	0.472
5400.000	2.171	118.426	5399.472	7.863	-12.294	7.863	14.593	302.603	0.732
5500.000	2.368	136.102	5499.393	5.465	-9.142	5.465	10.651	300.872	0.724
5600.000	1.993	132.809	5599.321	2.800	-6.426	2.800	7.009	293.546	0.395
5700.000	1.723	140.666	5699.268	0.439	-4.203	0.439	4.226	275.961	0.371
5800.000	1.227	148.006	5799.235	-1.653	-2.702	-1.653	3.168	238.552	0.530

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	0.738	156.832	5899.220	-3.173	-1.908	-3.173	3.702	211.029	0.510
6000.000	0.889	177.218	5999.210	-4.556	-1.590	-4.556	4.826	199.234	0.324
6100.000	0.617	173.154	6099.202	-5.866	-1.479	-5.866	6.050	194.155	0.277
6200.000	0.854	190.361	6199.193	-7.149	-1.519	-7.149	7.309	191.993	0.322
6300.000	1.032	215.167	6299.180	-8.667	-2.156	-8.667	8.931	193.967	0.441
6400.000	1.690	235.222	6399.152	-10.341	-3.841	-10.341	11.031	200.377	0.803
6500.000	2.264	253.958	6499.092	-11.822	-6.958	-11.822	13.717	210.479	0.857
6600.000	1.773	267.552	6599.030	-12.388	-10.434	-12.388	16.197	220.108	0.683
6700.000	1.411	276.475	6698.991	-12.290	-13.211	-12.290	18.044	227.068	0.437