



Company/Rig: NOBLE ENERGY/CORETECH
WELL/API#: STATE SLW 18-24/05-123-22665
DECLINATION: 8.3 DEGREES
TD AS DRILLED: 6811 FEET
COUNTY/STATE: WELD/COLORADO
Latitude: 40.400, Longitude: -104.482
GRID North is 0.660 Degrees East of True North
VS-Azi: 0.000 Degrees



DEPTH REFERENCE : RKB=SURFACE ELEVATION=4596 FEET

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: survey-de_01.ut

Minimum Curvature Method

Report Date/Time: 12/8/2014 / 09:37

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: KEVIN MCDOWELL

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	0.311	21.744	100.000	0.252	0.101	0.252	0.271	21.744	0.311
200.000	0.203	13.358	199.998	0.677	0.242	0.677	0.719	19.682	0.114
300.000	0.098	28.895	299.998	0.924	0.324	0.924	0.979	19.337	0.112
400.000	0.317	29.307	399.997	1.240	0.501	1.240	1.337	21.997	0.219
500.000	0.315	33.627	499.996	1.710	0.789	1.710	1.883	24.755	0.024
600.000	0.364	31.077	599.994	2.211	1.105	2.211	2.472	26.549	0.052
700.000	0.258	25.129	699.993	2.687	1.364	2.687	3.014	26.920	0.112
800.000	0.256	28.527	799.992	3.087	1.567	3.087	3.462	26.908	0.015
900.000	0.222	48.978	899.991	3.410	1.819	3.410	3.865	28.080	0.091
1000.000	0.261	39.311	999.990	3.714	2.110	3.714	4.271	29.602	0.057
1100.000	0.194	25.520	1099.989	4.043	2.327	4.043	4.665	29.927	0.087
1200.000	0.133	42.749	1199.989	4.280	2.479	4.280	4.946	30.074	0.078
1300.000	0.456	44.045	1299.987	4.651	2.834	4.651	5.447	31.352	0.324
1400.000	0.208	49.647	1399.986	5.055	3.249	5.055	6.009	32.729	0.250
1500.000	0.431	31.983	1499.984	5.491	3.586	5.491	6.558	33.147	0.241
1600.000	0.225	65.064	1599.982	5.893	3.963	5.893	7.101	33.921	0.272
1700.000	0.273	31.110	1699.981	6.180	4.264	6.180	7.508	34.606	0.153
1800.000	0.186	110.579	1799.981	6.327	4.539	6.327	7.787	35.655	0.301
1900.000	0.293	177.972	1899.980	6.014	4.699	6.014	7.633	38.004	0.280

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	0.244	216.531	1999.979	5.587	4.582	5.587	7.226	39.354	0.183
2100.000	0.474	213.630	2099.977	5.072	4.226	5.072	6.601	39.803	0.231
2200.000	0.480	207.797	2199.974	4.357	3.801	4.357	5.782	41.107	0.049
2300.000	0.433	204.609	2299.970	3.643	3.449	3.643	5.017	43.433	0.053
2400.000	0.416	212.233	2399.968	2.992	3.098	2.992	4.307	45.995	0.059
2500.000	0.589	201.331	2499.964	2.206	2.717	2.206	3.500	50.925	0.197
2600.000	0.334	225.361	2599.961	1.523	2.323	1.523	2.777	56.754	0.314
2700.000	0.195	206.159	2699.959	1.165	2.040	1.165	2.349	60.270	0.164
2800.000	0.237	319.087	2799.959	1.169	1.830	1.169	2.171	57.438	0.360
2900.000	0.446	0.955	2899.957	1.714	1.701	1.714	2.415	44.785	0.313
3000.000	0.340	337.522	2999.955	2.378	1.594	2.378	2.863	33.846	0.191
3100.000	0.437	103.853	3099.954	2.560	1.851	2.560	3.160	35.870	0.695
3200.000	1.291	133.856	3199.942	1.689	3.034	1.689	3.472	60.901	0.938
3300.000	1.841	137.000	3299.904	-0.267	4.942	-0.267	4.949	93.090	0.557
3400.000	2.266	133.382	3399.840	-2.800	7.474	-2.800	7.981	110.534	0.444
3500.000	2.669	129.478	3499.747	-5.637	10.708	-5.637	12.101	117.766	0.436
3600.000	2.675	132.737	3599.638	-8.701	14.219	-8.701	16.670	121.465	0.152
3700.000	2.721	128.453	3699.528	-11.761	17.791	-11.761	21.327	123.467	0.207
3800.000	2.263	129.105	3799.433	-14.482	21.182	-14.482	25.660	124.361	0.459
3900.000	1.886	131.500	3899.367	-16.818	23.947	-16.818	29.263	125.081	0.387
4000.000	1.431	135.647	3999.325	-18.801	26.052	-18.801	32.128	125.817	0.470
4100.000	0.657	156.619	4099.308	-20.220	27.153	-20.220	33.854	126.675	0.851
4200.000	0.625	184.976	4199.302	-21.289	27.333	-21.289	34.645	127.915	0.315
4300.000	0.455	254.275	4299.298	-21.940	26.903	-21.940	34.715	129.198	0.630
4400.000	1.274	296.391	4399.287	-21.554	25.525	-21.554	33.408	130.178	0.984
4500.000	2.031	311.929	4499.245	-19.875	23.211	-19.875	30.558	130.573	0.874
4600.000	2.037	324.167	4599.183	-17.250	20.852	-17.250	27.063	129.599	0.434
4700.000	1.657	351.273	4699.132	-14.380	19.592	-14.380	24.303	126.277	0.941
4800.000	1.640	356.992	4799.091	-11.522	19.298	-11.522	22.476	120.839	0.165
4900.000	1.145	338.290	4899.062	-9.164	18.853	-9.164	20.962	115.924	0.665
5000.000	1.125	312.797	4999.043	-7.569	17.763	-7.569	19.308	113.079	0.501
5100.000	0.699	314.048	5099.030	-6.478	16.605	-6.478	17.824	111.313	0.426
5200.000	0.934	314.082	5199.020	-5.487	15.581	-5.487	16.519	109.401	0.235
5300.000	1.028	318.190	5299.005	-4.252	14.398	-4.252	15.012	106.452	0.117
5400.000	1.051	297.268	5398.989	-3.163	12.985	-3.163	13.365	103.692	0.378
5500.000	0.892	297.856	5498.974	-2.380	11.482	-2.380	11.726	101.709	0.160
5600.000	0.948	299.850	5598.962	-1.604	10.076	-1.604	10.203	99.047	0.065
5700.000	1.035	297.522	5698.947	-0.775	8.558	-0.775	8.593	95.175	0.096
5800.000	0.828	275.374	5798.934	-0.290	7.037	-0.290	7.043	92.359	0.412
5900.000	1.064	284.330	5898.920	0.007	5.419	0.007	5.419	89.921	0.278

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	1.203	275.378	5998.901	0.336	3.475	0.336	3.491	84.484	0.225
6100.000	1.297	271.904	6098.877	0.472	1.299	0.472	1.382	70.046	0.121
6200.000	1.179	278.248	6198.853	0.657	-0.851	0.657	1.075	307.667	0.180
6300.000	1.355	270.222	6298.829	0.809	-3.051	0.809	3.157	284.849	0.249
6400.000	2.161	269.481	6398.781	0.797	-6.119	0.797	6.171	277.416	0.807
6500.000	2.857	268.297	6498.685	0.705	-10.496	0.705	10.520	273.845	0.698
6550.000	3.032	273.729	6548.619	0.754	-13.061	0.754	13.083	273.305	0.658