



Company/Rig: NOBLE ENERGY/CORETECH
WELL/API#: SCHROEDER 23-31/05-123-22881
DECLINATION: 8.22 Degrees
TD AS DRILLED: 7012'
COUNTY/STATE: WELD/COLORADO
VS-Azi: 0.000 Degrees
Latitude: 40.46944, Longitude: -104.51904
Grid North = True North -0.63 degs (NAD 83)
Grid Correction Applied = -0.63 degs



DEPTH REFERENCE : RKB=SURFACE ELEVATION=4672'

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: run1-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 2/4/2016 / 15:55

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: JAY HINMAN / Schroeder 23-31

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	0.214	349.100	100.000	0.183	-0.035	0.183	0.187	349.100	0.214
200.000	0.364	43.450	199.999	0.597	0.148	0.597	0.615	13.907	0.296
300.000	0.347	68.237	299.997	0.940	0.648	0.940	1.142	34.553	0.154
400.000	0.173	56.419	399.996	1.136	1.055	1.136	1.550	42.868	0.181
500.000	0.204	3.679	499.995	1.398	1.192	1.398	1.837	40.459	0.170
600.000	0.328	4.119	599.994	1.861	1.224	1.861	2.227	33.337	0.123
700.000	0.271	27.101	699.993	2.357	1.352	2.357	2.717	29.850	0.131
800.000	0.165	31.548	799.992	2.690	1.535	2.690	3.097	29.719	0.108
900.000	0.242	157.924	899.992	2.616	1.690	2.616	3.115	32.858	0.365
1000.000	0.239	168.876	999.991	2.216	1.809	2.216	2.861	39.238	0.046
1100.000	0.476	176.112	1099.989	1.596	1.878	1.596	2.465	49.633	0.240
1200.000	0.729	171.914	1199.983	0.553	1.996	0.553	2.071	74.518	0.256
1300.000	0.749	171.543	1299.975	-0.723	2.181	-0.723	2.298	108.341	0.021
1400.000	0.662	239.656	1399.969	-1.661	1.778	-1.661	2.434	133.051	0.793
1500.000	0.623	242.308	1499.963	-2.206	0.799	-2.206	2.346	160.100	0.049
1600.000	0.589	144.187	1599.959	-2.875	0.618	-2.875	2.941	167.871	0.915
1700.000	0.436	133.491	1699.955	-3.553	1.194	-3.553	3.749	161.423	0.180
1800.000	0.725	221.649	1799.951	-4.288	1.049	-4.288	4.414	166.249	0.834

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	0.172	340.819	1899.949	-4.619	0.579	-4.619	4.655	172.853	0.823
2000.000	0.473	157.000	1999.948	-4.857	0.691	-4.857	4.906	171.903	0.645
2100.000	0.571	193.699	2099.944	-5.721	0.734	-5.721	5.768	172.688	0.342
2200.000	0.671	206.228	2199.938	-6.731	0.357	-6.731	6.740	176.962	0.168
2300.000	0.749	218.957	2299.931	-7.764	-0.313	-7.764	7.771	182.306	0.175
2400.000	0.509	219.928	2399.925	-8.613	-1.009	-8.613	8.672	186.680	0.240
2500.000	0.248	263.290	2499.923	-8.979	-1.509	-8.979	9.105	189.536	0.371
2600.000	0.209	67.969	2599.922	-8.936	-1.554	-8.936	9.070	189.864	0.453
2700.000	0.188	49.307	2699.922	-8.761	-1.260	-8.761	8.851	188.185	0.068
2800.000	0.454	80.800	2799.920	-8.590	-0.744	-8.590	8.622	184.951	0.310
2900.000	0.496	66.005	2899.917	-8.351	0.043	-8.351	8.351	179.705	0.129
3000.000	0.491	66.160	2999.913	-8.002	0.830	-8.002	8.045	174.076	0.006
3100.000	0.270	8.730	3099.911	-7.596	1.258	-7.596	7.699	170.597	0.414
3200.000	0.932	348.273	3199.905	-6.566	1.128	-6.566	6.662	170.250	0.686
3300.000	1.368	327.885	3299.885	-4.758	0.328	-4.758	4.770	176.055	0.592
3400.000	1.219	308.132	3399.860	-3.090	-1.143	-3.090	3.295	200.302	0.468
3500.000	1.570	272.967	3499.832	-2.363	-3.348	-2.363	4.097	234.788	0.906
3600.000	1.413	289.411	3599.799	-1.882	-5.878	-1.882	6.172	252.247	0.454
3700.000	1.800	295.507	3699.759	-0.796	-8.459	-0.796	8.496	264.625	0.423
3800.000	1.574	278.330	3799.716	0.080	-11.236	0.080	11.236	270.406	0.551
3900.000	0.793	292.301	3899.694	0.541	-13.235	0.541	13.246	272.341	0.828
4000.000	0.948	241.054	3999.684	0.403	-14.599	0.403	14.604	271.582	0.765
4100.000	0.945	273.682	4099.671	0.056	-16.146	0.056	16.146	270.198	0.532
4200.000	0.961	259.262	4199.658	-0.047	-17.793	-0.047	17.793	269.847	0.240
4300.000	1.261	295.155	4299.640	0.264	-19.613	0.264	19.615	270.771	0.742
4400.000	1.589	308.494	4399.609	1.594	-21.694	1.594	21.752	274.203	0.464
4500.000	0.839	290.606	4499.586	2.715	-23.464	2.715	23.620	276.600	0.832
4600.000	0.321	193.808	4599.582	2.700	-24.216	2.700	24.366	276.362	0.933
4700.000	0.551	194.579	4699.579	1.962	-24.404	1.962	24.482	274.598	0.230
4800.000	0.455	139.603	4799.576	1.194	-24.267	1.194	24.296	272.818	0.472
4900.000	0.636	124.525	4899.572	0.577	-23.552	0.577	23.559	271.404	0.229
5000.000	0.690	135.759	4999.565	-0.169	-22.674	-0.169	22.675	269.573	0.140
5100.000	1.189	132.688	5099.551	-1.304	-21.491	-1.304	21.531	266.528	0.501
5200.000	1.659	129.907	5199.520	-2.936	-19.619	-2.936	19.837	261.488	0.474
5300.000	2.057	133.749	5299.467	-5.106	-17.212	-5.106	17.953	253.478	0.418
5400.000	1.847	155.213	5399.411	-7.810	-15.240	-7.810	17.124	242.866	0.756
5500.000	1.959	125.078	5499.358	-10.255	-13.165	-10.255	16.688	232.082	0.995
5600.000	1.999	127.054	5599.298	-12.288	-10.374	-12.288	16.082	220.172	0.079
5700.000	1.750	135.476	5699.245	-14.428	-7.912	-14.428	16.455	208.740	0.370
5800.000	1.826	167.095	5799.199	-17.070	-6.485	-17.070	18.260	200.804	0.977

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	2.020	156.809	5899.142	-20.243	-5.436	-20.243	20.960	195.030	0.395
6000.000	1.892	167.642	5999.085	-23.476	-4.388	-23.476	23.883	190.587	0.390
6100.000	1.989	159.063	6099.027	-26.710	-3.414	-26.710	26.927	187.285	0.306
6200.000	1.849	163.029	6198.971	-29.874	-2.323	-29.874	29.964	184.447	0.193
6300.000	1.549	163.258	6298.927	-32.711	-1.463	-32.711	32.744	182.561	0.299
6400.000	1.548	166.414	6398.891	-35.319	-0.756	-35.319	35.327	181.227	0.085
6500.000	1.573	173.527	6498.854	-37.996	-0.284	-37.996	37.997	180.429	0.195
6600.000	1.486	167.780	6598.818	-40.627	0.145	-40.627	40.627	179.796	0.177
6700.000	1.429	168.214	6698.786	-43.115	0.674	-43.115	43.120	179.104	0.058
6750.000	1.500	172.040	6748.769	-44.373	0.892	-44.373	44.382	178.849	0.242