



Company/Rig: NOBLE ENERGY/ CORETECH
WELL: WELLS RANCH USX BB 1-15
DECLINATION: 8.22
TD AS DRILLED: 6,757 FEET
COUNTY/STATE: WELD/COLORADO
Latitude: 40.423, Longitude: -104.382
GRID North is 0.720 Degrees East of True North
VS-Azi: 0.000 Degrees



DEPTH REFERENCE : RKB=SURFACE ELEVATION=4,667 FEET

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 10/8/2014 / 14:10

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: LEVI SHELDON

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	0.990	7.096	99.995	0.857	0.107	0.857	0.864	7.096	0.990
200.000	1.256	3.174	199.976	2.809	0.274	2.809	2.822	5.574	0.276
300.000	1.200	359.628	299.953	4.950	0.328	4.950	4.961	3.791	0.094
400.000	1.244	356.756	399.930	7.081	0.260	7.081	7.086	2.101	0.076
500.000	1.611	354.389	499.899	9.565	0.061	9.565	9.565	0.364	0.372
600.000	1.692	353.268	599.857	12.430	-0.250	12.430	12.433	358.849	0.087
700.000	1.764	347.649	699.812	15.400	-0.752	15.400	15.419	357.204	0.184
800.000	1.776	338.496	799.764	18.346	-1.649	18.346	18.420	354.862	0.283
900.000	1.792	334.743	899.716	21.202	-2.885	21.202	21.397	352.252	0.118
1000.000	1.796	331.058	999.667	23.987	-4.310	23.987	24.371	349.814	0.115
1100.000	1.892	333.436	1099.615	26.835	-5.806	26.835	27.456	347.791	0.123
1200.000	2.049	331.750	1199.556	29.886	-7.391	29.886	30.786	346.109	0.167
1300.000	2.218	334.402	1299.487	33.206	-9.073	33.206	34.423	344.718	0.196
1400.000	2.187	330.686	1399.413	36.615	-10.843	36.615	38.187	343.504	0.146
1500.000	2.015	324.059	1499.346	39.702	-12.810	39.702	41.717	342.118	0.297
1600.000	1.676	322.404	1599.294	42.284	-14.734	42.284	44.778	340.790	0.344
1700.000	1.562	327.150	1699.254	44.588	-16.365	44.588	47.496	339.845	0.176
1800.000	1.544	322.566	1799.217	46.803	-17.924	46.803	50.118	339.045	0.126
1900.000	1.043	319.838	1899.191	48.569	-19.330	48.569	52.274	338.298	0.505

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	1.284	318.637	1999.171	50.105	-20.657	50.105	54.197	337.595	0.243
2100.000	1.105	314.883	2099.149	51.627	-22.081	51.627	56.151	336.843	0.195
2200.000	1.167	313.134	2199.129	53.004	-23.508	53.004	57.983	336.082	0.071
2300.000	1.142	308.751	2299.109	54.324	-25.028	54.324	59.812	335.264	0.092
2400.000	1.189	302.758	2399.088	55.509	-26.678	55.509	61.587	334.331	0.131
2500.000	1.130	313.937	2499.068	56.755	-28.261	56.755	63.402	333.529	0.233
2600.000	1.211	306.150	2599.047	58.063	-29.825	58.063	65.275	332.812	0.178
2700.000	1.236	317.204	2699.024	59.478	-31.411	59.478	67.263	332.161	0.237
2800.000	1.301	329.073	2799.000	61.243	-32.727	61.243	69.439	331.881	0.270
2900.000	1.375	329.393	2898.973	63.249	-33.921	63.249	71.771	331.795	0.075
3000.000	1.274	325.556	2998.946	65.198	-35.161	65.198	74.075	331.663	0.135
3100.000	1.151	327.239	3098.924	66.960	-36.333	66.960	76.182	331.515	0.127
3200.000	0.688	349.043	3198.911	68.394	-36.990	68.394	77.756	331.593	0.573
3300.000	0.322	97.291	3298.908	68.948	-36.826	68.948	78.166	331.892	0.846
3400.000	0.613	124.130	3398.905	68.612	-36.105	68.612	77.532	332.246	0.357
3500.000	0.911	154.483	3498.896	67.594	-35.320	67.594	76.266	332.412	0.492
3600.000	1.364	147.233	3598.876	65.876	-34.333	65.876	74.286	332.472	0.474
3700.000	1.560	149.141	3698.844	63.707	-32.991	63.707	71.743	332.622	0.202
3800.000	1.927	148.487	3798.797	61.105	-31.414	61.105	68.708	332.792	0.367
3900.000	2.036	174.139	3898.740	57.905	-30.354	57.905	65.378	332.336	0.886
4000.000	2.480	188.790	3998.662	53.999	-30.503	53.999	62.019	330.539	0.725
4100.000	3.124	202.462	4098.543	49.342	-31.875	49.342	58.743	327.138	0.924
4200.000	3.863	210.699	4198.358	43.928	-34.636	43.928	55.940	321.745	0.891
4300.000	4.683	217.010	4298.079	37.772	-38.813	37.772	54.158	314.221	0.944
4400.000	5.531	222.720	4397.682	30.971	-44.539	30.971	54.249	304.814	0.988
4500.000	5.376	224.193	4497.229	24.072	-51.075	24.072	56.463	295.235	0.209
4600.000	4.873	220.242	4596.830	17.470	-57.085	17.470	59.698	287.016	0.614
4700.000	4.527	209.510	4696.495	10.793	-61.773	10.793	62.709	279.911	0.943
4800.000	4.193	210.981	4796.206	4.224	-65.599	4.224	65.734	273.685	0.352
4900.000	3.725	208.568	4895.967	-1.763	-69.034	-1.763	69.057	268.537	0.497
5000.000	2.860	206.130	4995.801	-6.856	-71.686	-6.856	72.013	264.537	0.877
5100.000	1.930	202.933	5095.712	-10.647	-73.441	-10.647	74.209	261.751	0.939
5200.000	1.277	191.376	5195.673	-13.290	-74.317	-13.290	75.496	259.861	0.725
5300.000	0.736	204.753	5295.657	-14.965	-74.806	-14.965	76.288	258.687	0.587
5400.000	0.455	163.812	5395.652	-15.929	-74.964	-15.929	76.637	258.003	0.492
5500.000	0.203	178.414	5495.651	-16.487	-74.848	-16.487	76.643	257.578	0.264
5600.000	0.227	187.576	5595.650	-16.860	-74.869	-16.860	76.744	257.309	0.042
5700.000	0.177	179.245	5695.649	-17.211	-74.893	-17.211	76.846	257.058	0.058
5800.000	0.347	126.838	5795.648	-17.546	-74.649	-17.546	76.684	256.773	0.277
5900.000	0.428	44.267	5895.647	-17.460	-74.146	-17.460	76.174	256.749	0.515

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6000.000	0.408	124.407	5995.645	-17.394	-73.592	-17.394	75.619	256.702	0.538
6100.000	0.479	126.963	6095.642	-17.846	-72.964	-17.846	75.115	256.256	0.074
6200.000	0.371	109.358	6195.639	-18.205	-72.325	-18.205	74.581	255.871	0.168
6300.000	0.298	96.885	6295.637	-18.343	-71.761	-18.343	74.068	255.661	0.102
6400.000	0.226	148.645	6395.636	-18.543	-71.400	-18.543	73.768	255.441	0.238
6500.000	0.334	143.667	6495.635	-18.947	-71.124	-18.947	73.605	255.084	0.111