



Company/Rig: NOBLE ENERGY/ CORETECH
WELL: WELLS RANCH AF 06-16
DECLINATION: 8.2 DEGREES
TD AS DRILLED: 6710 FEET
COUNTY/STATE: WELD/COLORADO
Latitude: 40.422, Longitude: -104.356
GRID North is 0.740 Degrees East of True North
VS-Azi: 0.000 Degrees



DEPTH REFERENCE : RKB=GLSURFACE ELEVATION=4653FEET

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 10/14/2014 / 12:34

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	0.062	328.216	100.000	0.046	-0.028	0.046	0.054	328.216	0.062
200.000	0.192	158.005	200.000	-0.064	0.006	-0.064	0.064	174.609	0.253
300.000	0.252	15.658	300.000	-0.007	0.128	-0.007	0.128	93.043	0.421
400.000	0.273	114.215	399.999	0.107	0.405	0.107	0.419	75.134	0.398
500.000	0.390	151.922	499.997	-0.290	0.782	-0.290	0.834	110.362	0.241
600.000	0.669	193.576	599.993	-1.158	0.805	-1.158	1.410	145.181	0.458
700.000	0.575	182.805	699.987	-2.227	0.644	-2.227	2.318	163.878	0.149
800.000	1.058	172.740	799.977	-3.644	0.736	-3.644	3.718	168.586	0.502
900.000	1.086	171.703	899.959	-5.498	0.989	-5.498	5.586	169.801	0.033
1000.000	1.225	176.059	999.939	-7.502	1.199	-7.502	7.597	170.917	0.165
1100.000	1.238	161.485	1099.916	-9.593	1.616	-9.593	9.728	170.439	0.313
1200.000	1.092	167.228	1199.896	-11.546	2.169	-11.546	11.748	169.359	0.187
1300.000	1.141	166.863	1299.877	-13.445	2.606	-13.445	13.695	169.029	0.050
1400.000	1.114	163.682	1399.857	-15.347	3.106	-15.347	15.658	168.560	0.068
1500.000	0.992	162.800	1499.840	-17.107	3.635	-17.107	17.489	168.004	0.123
1600.000	0.958	151.105	1599.826	-18.666	4.295	-18.666	19.154	167.043	0.202
1700.000	0.484	134.429	1699.818	-19.694	5.000	-19.694	20.319	165.753	0.514
1800.000	0.411	170.814	1799.815	-20.344	5.359	-20.344	21.038	165.241	0.288
1900.000	0.120	197.698	1899.814	-20.798	5.385	-20.798	21.484	165.485	0.309

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	0.298	293.919	1999.813	-20.792	5.115	-20.792	21.412	166.180	0.333
2100.000	0.884	319.121	2099.808	-20.104	4.372	-20.104	20.574	167.730	0.627
2200.000	1.109	320.354	2199.793	-18.776	3.250	-18.776	19.055	170.179	0.227
2300.000	0.682	338.034	2299.780	-17.478	2.410	-17.478	17.644	172.150	0.504
2400.000	0.728	328.588	2399.773	-16.384	1.856	-16.384	16.489	173.536	0.125
2500.000	0.990	353.179	2499.762	-14.984	1.423	-14.984	15.052	174.576	0.447
2600.000	1.744	10.176	2599.733	-12.628	1.589	-12.628	12.728	172.829	0.848
2700.000	2.633	16.718	2699.659	-8.930	2.519	-8.930	9.278	164.250	0.922
2800.000	3.088	33.656	2799.536	-4.488	4.672	-4.488	6.478	133.849	0.955
2900.000	3.286	24.264	2899.382	0.367	7.342	0.367	7.352	87.142	0.558
3000.000	3.082	18.575	2999.228	5.527	9.376	5.527	10.884	59.481	0.376
3100.000	2.294	28.427	3099.118	9.836	11.186	9.836	14.895	48.674	0.910
3200.000	1.602	39.023	3199.060	12.682	13.018	12.682	18.174	45.750	0.778
3300.000	0.765	58.906	3299.038	14.112	14.470	14.112	20.212	45.717	0.920
3400.000	0.720	75.063	3399.029	14.619	15.648	14.619	21.414	46.948	0.213
3500.000	0.798	56.665	3499.021	15.163	16.837	15.163	22.659	47.994	0.254
3600.000	0.764	55.897	3599.011	15.920	17.971	15.920	24.008	48.463	0.035
3700.000	0.611	74.773	3699.004	16.433	19.037	16.433	25.149	49.199	0.271
3800.000	0.948	110.069	3798.996	16.290	20.329	16.290	26.050	51.294	0.571
3900.000	1.655	131.809	3898.970	15.043	22.182	15.043	26.802	55.856	0.851
4000.000	2.593	140.686	3998.900	12.330	24.692	12.330	27.599	63.463	0.991
4100.000	3.222	147.764	4098.771	8.203	27.624	8.203	28.816	73.461	0.724
4200.000	2.967	147.290	4198.625	3.648	30.521	3.648	30.739	83.184	0.257
4300.000	2.970	155.198	4298.492	-0.881	33.007	-0.881	33.018	91.529	0.409
4400.000	2.714	152.127	4398.369	-5.325	35.200	-5.325	35.601	98.603	0.298
4500.000	2.518	140.469	4498.265	-9.112	37.705	-9.112	38.791	103.586	0.566
4600.000	2.137	147.122	4598.183	-12.372	40.115	-12.372	41.980	107.141	0.466
4700.000	1.986	140.932	4698.118	-15.283	42.219	-15.283	44.900	109.900	0.269
4800.000	2.074	132.904	4798.055	-17.860	44.637	-17.860	48.077	111.808	0.298
4900.000	1.893	139.887	4897.996	-20.355	47.026	-20.355	51.243	113.405	0.302
5000.000	1.598	137.198	4997.949	-22.641	49.038	-22.641	54.012	114.783	0.306
5100.000	1.383	137.806	5097.915	-24.558	50.795	-24.558	56.420	115.802	0.216
5200.000	1.185	131.431	5197.890	-26.136	52.381	-26.136	58.539	116.517	0.243
5300.000	1.460	103.462	5297.864	-27.117	54.395	-27.117	60.780	116.497	0.693
5400.000	1.474	98.623	5397.832	-27.606	56.906	-27.606	63.249	115.879	0.125
5500.000	1.633	89.937	5497.795	-27.798	59.603	-27.798	65.767	115.003	0.283
5600.000	1.801	82.152	5597.750	-27.581	62.585	-27.581	68.393	113.783	0.287
5700.000	2.232	91.490	5697.688	-27.417	66.088	-27.417	71.550	112.532	0.540
5800.000	2.095	110.889	5797.618	-28.120	69.742	-28.120	75.198	111.959	0.741
5900.000	2.248	88.425	5897.548	-28.718	73.411	-28.718	78.828	111.365	0.859

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	2.056	74.793	5997.478	-28.193	77.102	-28.193	82.095	110.086	0.545
6100.000	1.938	74.378	6097.418	-27.268	80.461	-27.268	84.955	108.721	0.119
6200.000	1.718	88.812	6197.367	-26.781	83.588	-26.781	87.773	107.765	0.508
6300.000	1.202	105.896	6297.335	-27.037	86.095	-27.037	90.241	107.434	0.670
6400.000	1.016	108.207	6397.316	-27.602	87.946	-27.602	92.176	107.424	0.191
6450.000	0.929	134.621	6447.309	-28.025	88.656	-28.025	92.980	107.542	0.905