



Company/Rig: NOBLE ENERGY/CORETECH
WELL/API#: WELLS RANCH USX BB 5-16/05-123-26242
DECLINATION: 8.18 DEGREES
TD AS DRILLED: 6966 FEET
COUNTY/STATE: WELD/COLORADO
VS-Azi: 0.000 Degrees
Latitude: 40.42355, Longitude: -104.45393
Grid Convergence Applied = -0.68 degs (NAD 27)
Grid North = True North -0.68 degs



DEPTH REFERENCE : RKB=SURFACE ELEVATION= 4742 FEET

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 5/14/2015 / 13:34

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	0.725	322.017	99.997	0.498	-0.389	0.498	0.632	322.017	0.725
200.000	0.885	307.211	199.988	1.464	-1.393	1.464	2.021	316.414	0.261
300.000	0.602	313.668	299.979	2.293	-2.388	2.293	3.311	313.841	0.294
400.000	0.625	306.486	399.973	2.980	-3.206	2.980	4.378	312.906	0.080
500.000	0.699	324.468	499.967	3.801	-4.000	3.801	5.518	313.543	0.220
600.000	0.798	331.335	599.958	4.909	-4.688	4.909	6.788	316.316	0.133
700.000	0.875	334.775	699.948	6.210	-5.348	6.210	8.195	319.268	0.092
800.000	0.944	328.259	799.935	7.602	-6.106	7.602	9.751	321.225	0.124
900.000	1.015	326.211	899.920	9.038	-7.032	9.038	11.452	322.115	0.079
1000.000	0.960	331.541	999.906	10.511	-7.924	10.511	13.163	322.988	0.107
1100.000	1.021	336.224	1099.891	12.063	-8.683	12.063	14.863	324.255	0.101
1200.000	1.015	324.196	1199.875	13.597	-9.560	13.597	16.622	324.889	0.213
1300.000	1.228	320.724	1299.856	15.145	-10.756	15.145	18.576	324.616	0.224
1400.000	0.884	320.105	1399.839	16.566	-11.930	16.566	20.414	324.241	0.344
1500.000	0.957	345.628	1499.826	17.967	-12.632	17.967	21.963	324.890	0.413
1600.000	1.039	323.935	1599.811	19.508	-13.373	19.508	23.652	325.570	0.384
1700.000	0.477	338.543	1699.802	20.629	-14.059	20.629	24.964	325.725	0.590
1800.000	0.536	354.057	1799.798	21.482	-14.260	21.482	25.784	326.424	0.149

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	0.104	61.309	1899.797	21.990	-14.229	21.990	26.192	327.095	0.505
2000.000	0.355	43.122	1999.796	22.260	-13.937	22.260	26.263	327.949	0.259
2100.000	0.707	67.560	2099.792	22.722	-13.155	22.722	26.255	329.931	0.411
2200.000	0.872	77.770	2199.782	23.119	-11.841	23.119	25.975	332.879	0.216
2300.000	0.880	118.350	2299.771	22.915	-10.422	22.915	25.174	335.544	0.608
2400.000	1.079	147.574	2399.757	21.755	-9.240	21.755	23.636	336.987	0.531
2500.000	0.896	147.713	2499.742	20.299	-8.318	20.299	21.937	337.718	0.183
2600.000	0.888	162.656	2599.730	18.898	-7.669	18.898	20.395	337.913	0.232
2700.000	0.958	164.332	2699.717	17.354	-7.212	17.354	18.793	337.433	0.075
2800.000	0.740	142.302	2799.707	16.038	-6.592	16.038	17.340	337.658	0.389
2900.000	0.902	158.544	2899.696	14.795	-5.909	14.795	15.931	338.229	0.282
3000.000	0.596	129.035	2999.688	13.734	-5.217	13.734	14.692	339.201	0.483
3100.000	0.493	160.688	3099.684	13.001	-4.671	13.001	13.814	340.239	0.313
3200.000	0.451	138.919	3199.680	12.299	-4.270	12.299	13.019	340.854	0.183
3300.000	0.685	209.449	3299.677	11.482	-4.305	11.482	12.262	339.445	0.683
3400.000	1.581	187.951	3399.656	9.595	-4.790	9.595	10.724	333.469	0.977
3500.000	1.895	176.905	3499.611	6.577	-4.892	6.577	8.197	323.360	0.458
3600.000	1.595	168.118	3599.564	3.564	-4.516	3.564	5.753	308.284	0.401
3700.000	1.868	165.151	3699.518	0.627	-3.812	0.627	3.863	279.347	0.288
3800.000	2.356	161.689	3799.450	-2.899	-2.748	-2.899	3.995	223.468	0.504
3900.000	2.476	163.856	3899.361	-6.925	-1.502	-6.925	7.086	192.238	0.151
4000.000	2.452	158.080	3999.269	-10.984	-0.103	-10.984	10.984	180.537	0.249
4100.000	2.430	141.439	4099.180	-14.626	2.017	-14.626	14.764	172.149	0.706
4200.000	2.753	130.031	4199.078	-17.828	5.177	-17.828	18.565	163.807	0.607
4300.000	2.848	113.217	4298.960	-20.352	9.300	-20.352	22.376	155.443	0.824
4400.000	2.589	109.651	4398.848	-22.091	13.710	-22.091	26.000	148.177	0.310
4500.000	2.651	95.233	4498.744	-23.062	18.140	-23.062	29.341	141.812	0.660
4600.000	2.702	96.417	4598.635	-23.536	22.785	-23.536	32.758	135.929	0.075
4700.000	3.204	95.778	4698.502	-24.081	27.907	-24.081	36.860	130.791	0.503
4800.000	3.065	96.882	4798.352	-24.682	33.341	-24.682	41.483	126.512	0.151
4900.000	2.832	107.475	4898.221	-25.745	38.352	-25.745	46.191	123.872	0.592
5000.000	2.772	100.768	4998.101	-26.938	43.084	-26.938	50.812	122.016	0.333
5100.000	2.631	101.646	5097.990	-27.853	47.707	-27.853	55.243	120.278	0.147
5200.000	1.882	91.001	5197.913	-28.345	51.596	-28.345	58.869	118.783	0.855
5300.000	1.875	84.898	5297.859	-28.228	54.867	-28.228	61.703	117.225	0.200
5400.000	2.109	96.468	5397.799	-28.290	58.325	-28.290	64.824	115.875	0.464
5500.000	2.043	94.761	5497.733	-28.645	61.931	-28.645	68.235	114.822	0.090
5600.000	1.982	100.813	5597.672	-29.118	65.406	-29.118	71.594	113.998	0.221
5700.000	1.797	100.197	5697.617	-29.720	68.647	-29.720	74.805	113.409	0.186
5800.000	1.409	106.062	5797.578	-30.337	71.371	-30.337	77.552	113.028	0.421

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	1.274	97.967	5897.551	-30.831	73.653	-30.831	79.846	112.714	0.232
6000.000	1.109	80.651	5997.529	-30.828	75.709	-30.828	81.745	112.156	0.394
6100.000	1.229	90.767	6097.508	-30.685	77.737	-30.685	83.574	111.541	0.238
6200.000	0.777	87.177	6197.493	-30.666	79.487	-30.666	85.198	111.097	0.456
6300.000	0.900	67.212	6297.482	-30.329	80.888	-30.329	86.387	110.553	0.315
6400.000	1.061	82.219	6397.468	-29.899	82.529	-29.899	87.779	109.915	0.302
6500.000	1.483	76.528	6497.443	-29.473	84.705	-29.473	89.686	109.185	0.439
6600.000	1.662	81.159	6597.405	-28.948	87.396	-28.948	92.066	108.327	0.220
6700.000	1.724	77.084	6697.362	-28.389	90.295	-28.389	94.653	107.453	0.135