



Company/Rig: NOBLE ENERGY/ CORETECH
WELL: PEDRO STATE G 36-20
DECLINATION: 8.35
TD AS DRILLED: 7,694 FEET
COUNTY/STATE: WELD/COLORADO
Latitude: 40.269, Longitude: -104.616
GRID North is 0.570 Degrees East of True North
VS-Azi: 0.000 Degrees



DEPTH REFERENCE : RKB=SURFACE ELEVATION=4,825 FEET

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 8/11/2014 / 14:01

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

SURVEYOR: LEVI SHELTON

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	0.720	213.605	99.997	-0.523	-0.348	-0.523	0.628	213.605	0.720
200.000	0.535	238.176	199.992	-1.292	-1.092	-1.292	1.692	220.198	0.322
300.000	0.429	232.685	299.988	-1.766	-1.787	-1.766	2.512	225.341	0.116
400.000	0.327	242.459	399.986	-2.124	-2.337	-2.124	3.158	227.732	0.121
500.000	0.387	269.111	499.984	-2.261	-2.928	-2.261	3.700	232.318	0.175
600.000	0.429	255.965	599.981	-2.357	-3.629	-2.357	4.327	236.991	0.102
700.000	0.398	274.823	699.979	-2.419	-4.338	-2.419	4.967	240.853	0.139
800.000	0.454	271.739	799.976	-2.378	-5.080	-2.378	5.609	244.914	0.061
900.000	0.601	263.946	899.972	-2.421	-5.997	-2.421	6.467	248.014	0.163
1000.000	0.560	256.776	999.967	-2.588	-6.994	-2.588	7.458	249.692	0.083
1100.000	0.587	267.648	1099.962	-2.721	-7.982	-2.721	8.433	251.175	0.112
1200.000	0.618	259.685	1199.956	-2.839	-9.024	-2.839	9.460	252.538	0.089
1300.000	0.649	261.088	1299.950	-3.023	-10.114	-3.023	10.556	253.359	0.035
1400.000	0.575	274.103	1399.944	-3.075	-11.175	-3.075	11.590	254.615	0.157
1500.000	0.682	262.912	1499.938	-3.112	-12.266	-3.112	12.655	255.762	0.162
1600.000	0.958	253.499	1599.928	-3.423	-13.659	-3.423	14.082	255.930	0.306
1700.000	1.073	247.777	1699.912	-4.015	-15.328	-4.015	15.845	255.321	0.153
1800.000	1.133	247.322	1799.894	-4.750	-17.107	-4.750	17.754	254.480	0.060
1900.000	1.228	251.742	1899.873	-5.467	-19.036	-5.467	19.806	253.976	0.132

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	1.161	245.325	1999.851	-6.226	-20.974	-6.226	21.879	253.468	0.149
2100.000	1.213	240.005	2099.830	-7.178	-22.811	-7.178	23.914	252.533	0.122
2200.000	1.282	246.726	2199.806	-8.149	-24.756	-8.149	26.063	251.780	0.162
2300.000	1.540	261.070	2299.776	-8.800	-27.111	-8.800	28.503	252.018	0.435
2400.000	1.887	257.249	2399.731	-9.371	-30.043	-9.371	31.471	252.676	0.365
2500.000	1.877	263.188	2499.677	-9.929	-33.275	-9.929	34.725	253.385	0.195
2600.000	2.056	274.489	2599.619	-9.983	-36.690	-9.983	38.024	254.779	0.426
2700.000	1.917	283.099	2699.559	-9.463	-40.108	-9.463	41.209	256.724	0.329
2800.000	2.187	283.488	2799.494	-8.639	-43.593	-8.639	44.440	258.790	0.271
2900.000	2.218	290.724	2899.421	-7.509	-47.258	-7.509	47.851	260.971	0.280
3000.000	1.998	283.954	2999.353	-6.404	-50.760	-6.404	51.162	262.809	0.332
3100.000	1.598	292.258	3099.304	-5.456	-53.742	-5.456	54.018	264.203	0.476
3200.000	1.248	293.077	3199.273	-4.501	-56.035	-4.501	56.215	265.408	0.350
3300.000	0.850	298.323	3299.256	-3.722	-57.690	-3.722	57.810	266.309	0.409
3400.000	0.571	303.700	3399.248	-3.093	-58.758	-3.093	58.839	266.987	0.287
3500.000	0.433	36.434	3499.246	-2.513	-58.948	-2.513	59.002	267.559	0.733
3600.000	0.418	57.979	3599.243	-2.016	-58.415	-2.016	58.450	268.024	0.160
3700.000	0.668	349.285	3699.239	-1.249	-58.214	-1.249	58.228	268.771	0.647
3800.000	1.102	340.042	3799.227	0.227	-58.651	0.227	58.651	270.222	0.455
3900.000	1.055	321.425	3899.210	1.851	-59.553	1.851	59.582	271.780	0.352
4000.000	0.611	336.153	3999.199	3.058	-60.343	3.058	60.420	272.901	0.489
4100.000	0.770	329.025	4099.192	4.122	-60.904	4.122	61.044	273.872	0.180
4200.000	0.816	340.862	4199.182	5.371	-61.483	5.371	61.718	274.993	0.170
4300.000	1.069	336.197	4299.169	6.897	-62.093	6.897	62.475	276.338	0.264
4400.000	1.412	359.904	4399.146	8.982	-62.472	8.982	63.114	278.182	0.610
4500.000	1.817	354.002	4499.106	11.791	-62.639	11.791	63.739	280.660	0.438
4600.000	1.759	359.289	4599.057	14.903	-62.824	14.903	64.567	283.344	0.175
4700.000	1.675	333.545	4699.014	17.746	-63.494	17.746	65.928	285.615	0.769
4800.000	2.978	301.514	4798.933	20.412	-66.360	20.412	69.428	287.098	1.793
4900.000	3.203	293.369	4898.788	22.878	-71.139	22.878	74.727	287.828	0.493
5000.000	2.728	288.798	4998.654	24.753	-75.957	24.753	79.888	288.050	0.530
5100.000	2.624	292.890	5098.545	26.410	-80.319	26.410	84.549	288.202	0.218
5200.000	1.939	284.819	5198.465	27.734	-84.063	27.734	88.520	288.258	0.755
5300.000	1.637	283.841	5298.417	28.508	-87.086	28.508	91.633	288.126	0.304
5400.000	1.571	284.636	5398.377	29.196	-89.799	29.196	94.426	288.011	0.070
5500.000	1.812	287.536	5498.334	30.019	-92.632	30.019	97.375	287.956	0.255
5600.000	0.895	285.160	5598.305	30.699	-94.893	30.699	99.735	287.927	0.918
5700.000	0.334	253.780	5698.299	30.822	-95.927	30.822	100.757	287.813	0.634
5800.000	0.681	148.347	5798.296	30.235	-95.896	30.235	100.549	287.500	0.834
5900.000	0.968	126.693	5898.286	29.225	-94.907	29.225	99.304	287.115	0.419

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	1.066	141.520	5998.271	27.992	-93.651	27.992	97.744	286.641	0.280
6100.000	1.274	128.718	6098.250	26.569	-92.205	26.569	95.956	286.074	0.333
6200.000	1.349	136.102	6198.224	25.025	-90.522	25.025	93.917	285.454	0.185
6300.000	1.324	112.268	6298.197	23.739	-88.637	23.739	91.761	284.994	0.552
6400.000	1.597	119.148	6398.165	22.623	-86.351	22.623	89.265	284.681	0.324
6500.000	1.921	108.887	6498.118	21.402	-83.548	21.402	86.245	284.368	0.451
6600.000	2.892	103.780	6598.028	20.258	-79.511	20.258	82.051	284.294	0.993
6700.000	4.455	98.320	6697.820	19.095	-73.218	19.095	75.667	284.617	1.600
6800.000	2.715	116.351	6797.624	17.482	-67.252	17.482	69.487	284.571	2.053
6900.000	2.045	134.514	6897.538	15.180	-63.858	15.180	65.637	283.372	1.001
7000.000	1.576	127.085	6997.488	13.100	-61.489	13.100	62.869	282.027	0.523