



Company: NOBLE ENERGY
Well: ROBERT POWERS #X27-18
API#: 05-123-26837
Rig Name: PRODUCTION/LIGHTNING WL
Location: WELD COUNTY, CO
Latitude: 40.113, Longitude: -104.650
GRID North is 0.550 Degrees East of True North
VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : KB= GROUND LEVEL

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: run1-01_ed.ut
Minimum Curvature Method
Report Date/Time: 8/31/2012 / 10:15

Vaughn Energy Services
Pinedale, Wyoming
303-853-4976
Jay Hinman
Robert Powers USX X27-18

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	0.607	313.451	99.998	0.365	-0.385	0.365	0.530	313.451	0.607
200.000	0.549	342.946	199.993	1.187	-0.910	1.187	1.496	322.525	0.300
300.000	0.589	308.052	299.989	1.962	-1.456	1.962	2.443	323.432	0.344
400.000	0.510	294.689	399.984	2.465	-2.265	2.465	3.348	317.422	0.150
500.000	0.427	63.944	499.982	2.815	-2.335	2.815	3.658	320.322	0.847
600.000	0.453	78.104	599.980	3.060	-1.614	3.060	3.460	332.192	0.111
700.000	0.514	76.759	699.976	3.244	-0.790	3.244	3.339	346.309	0.063
800.000	0.548	80.269	799.972	3.428	0.118	3.428	3.430	1.975	0.047
900.000	0.969	148.211	899.964	2.791	1.035	2.791	2.976	20.352	0.916
1000.000	1.885	154.015	999.932	0.594	2.201	0.594	2.280	74.893	0.926
1100.000	1.696	151.435	1099.884	-2.184	3.629	-2.184	4.236	121.040	0.205
1200.000	1.936	159.780	1199.833	-5.069	4.921	-5.069	7.065	135.853	0.356
1300.000	1.891	158.819	1299.778	-8.193	6.101	-8.193	10.215	143.328	0.056
1400.000	1.980	158.469	1399.721	-11.338	7.331	-11.338	13.501	147.114	0.090
1500.000	1.980	162.034	1499.661	-14.588	8.497	-14.588	16.882	149.779	0.123
1600.000	2.035	159.798	1599.600	-17.897	9.643	-17.897	20.330	151.683	0.095
1700.000	2.016	161.100	1699.537	-21.227	10.826	-21.227	23.828	152.978	0.050
1800.000	1.928	169.956	1799.478	-24.548	11.689	-24.548	27.189	154.537	0.317
1900.000	1.920	161.721	1899.422	-27.796	12.508	-27.796	30.480	155.772	0.276
2000.000	1.730	169.302	1999.371	-30.870	13.314	-30.870	33.619	156.670	0.307
2100.000	1.199	177.910	2099.338	-33.400	13.632	-33.400	36.075	157.797	0.573
2200.000	0.867	213.586	2199.323	-35.075	13.252	-35.075	37.495	159.302	0.708
2300.000	0.947	266.802	2299.312	-35.751	12.009	-35.751	37.714	161.433	0.816
2400.000	1.138	282.862	2399.296	-35.576	10.215	-35.576	37.014	163.980	0.347
2500.000	1.684	289.945	2499.265	-34.854	7.866	-34.854	35.731	167.283	0.572
2600.000	2.181	299.329	2599.208	-33.421	4.826	-33.421	33.768	171.784	0.587
2700.000	1.959	311.600	2699.143	-31.354	1.889	-31.354	31.411	176.553	0.494
2800.000	1.687	321.516	2799.093	-29.067	-0.306	-29.067	29.069	180.602	0.415
2900.000	1.693	337.879	2899.050	-26.546	-1.778	-26.546	26.605	183.832	0.481
3000.000	1.628	346.361	2999.008	-23.797	-2.669	-23.797	23.946	186.401	0.254
3100.000	1.714	340.985	3098.966	-21.003	-3.492	-21.003	21.291	189.439	0.179
3200.000	1.499	345.453	3198.926	-18.323	-4.307	-18.323	18.823	193.229	0.249
3300.000	1.475	348.781	3298.893	-15.795	-4.886	-15.795	16.534	197.189	0.090

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
3400.000	1.085	342.685	3398.868	-13.629	-5.418	-13.629	14.667	201.681	0.412
3500.000	0.783	336.972	3498.854	-12.096	-5.968	-12.096	13.488	206.259	0.316
3600.000	0.783	325.818	3598.845	-10.902	-6.619	-10.902	12.754	211.263	0.152
3700.000	0.610	284.714	3698.838	-10.201	-7.517	-10.201	12.672	216.386	0.515
3800.000	0.182	191.251	3798.836	-10.222	-8.063	-10.222	13.020	218.266	0.647
3900.000	0.303	174.372	3898.835	-10.641	-8.068	-10.641	13.354	217.170	0.139
4000.000	0.518	124.635	3998.833	-11.161	-7.671	-11.161	13.543	214.501	0.396
4100.000	0.644	109.583	4098.828	-11.606	-6.770	-11.606	13.436	210.256	0.197
4200.000	0.733	92.702	4198.821	-11.824	-5.601	-11.824	13.084	205.347	0.221
4300.000	1.515	103.544	4298.801	-12.164	-3.676	-12.164	12.708	196.817	0.807
4400.000	1.835	106.792	4398.758	-12.936	-0.858	-12.936	12.965	183.796	0.333
4500.000	1.711	107.561	4498.710	-13.849	2.098	-13.849	14.007	171.387	0.126
4600.000	1.583	112.663	4598.669	-14.832	4.796	-14.832	15.588	162.082	0.195
4700.000	1.431	98.377	4698.634	-15.546	7.306	-15.546	17.177	154.830	0.404
4800.000	1.628	107.775	4798.599	-16.162	9.893	-16.162	18.949	148.528	0.318
4900.000	1.586	105.077	4898.560	-16.955	12.582	-16.955	21.113	143.422	0.086
5000.000	1.128	131.321	4998.532	-17.965	14.657	-17.965	23.186	140.790	0.761
5100.000	0.662	155.855	5098.520	-19.142	15.633	-19.142	24.715	140.762	0.593
5200.000	0.722	176.514	5198.513	-20.298	15.908	-20.298	25.789	141.914	0.255
5300.000	0.855	194.648	5298.504	-21.649	15.757	-21.649	26.776	143.952	0.281
5400.000	0.782	178.109	5398.493	-23.053	15.591	-23.053	27.830	145.930	0.247
5500.000	0.894	194.494	5498.483	-24.491	15.418	-24.491	28.940	147.808	0.264
5600.000	1.097	206.238	5598.468	-26.105	14.799	-26.105	30.008	150.450	0.287
5700.000	1.098	193.372	5698.450	-27.896	14.155	-27.896	31.282	153.097	0.246
5800.000	1.089	207.864	5798.432	-29.669	13.489	-29.669	32.591	155.551	0.276
5900.000	0.387	209.184	5898.423	-30.803	12.880	-30.803	33.388	157.308	0.702
6000.000	0.299	209.226	5998.421	-31.325	12.588	-31.325	33.760	158.107	0.088
6100.000	0.328	169.210	6098.420	-31.834	12.515	-31.834	34.205	158.539	0.216
6200.000	0.428	191.617	6198.417	-32.481	12.493	-32.481	34.801	158.962	0.177
6300.000	0.740	144.893	6298.413	-33.375	12.789	-33.375	35.742	159.034	0.544
6400.000	1.313	125.710	6398.396	-34.572	14.090	-34.572	37.333	157.826	0.661
6500.000	2.260	117.613	6498.347	-36.155	16.768	-36.155	39.854	155.119	0.978
6600.000	2.425	106.362	6598.264	-37.665	20.545	-37.665	42.904	151.389	0.487
6700.000	2.314	100.110	6698.178	-38.615	24.562	-38.615	45.765	147.541	0.281
6800.000	1.796	86.593	6798.114	-38.876	28.114	-38.876	47.977	144.127	0.706
6900.000	1.625	75.616	6898.070	-38.431	31.052	-38.431	49.408	141.062	0.369
7000.000	1.500	73.906	6998.033	-37.716	33.683	-37.716	50.567	138.233	0.133
7100.000	1.214	52.141	7098.005	-36.703	35.777	-36.703	51.255	135.732	0.584
7200.000	0.968	64.089	7197.987	-35.685	37.372	-35.685	51.673	133.677	0.334
HORIZONTAL DISPLACEMENT IS 51.673 FEET AT 133.677 DEGREES									