

Company: NOBLE ENERGY

Well: DINNER 14-15

API: 05-123-24249

Rig Name: PRODUCTION/LIGHTNING

State/County: COLORADO/WELD

Latitude: 40.489, Longitude: -104.625

GRID North is 0.570 Degrees East of True North

VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB = GROUND LEVEL

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 12/17/2012 / 13:56

VAUGHN ENERGY SERVICES

HENDERSON, COLORADO

866-835-8333

NICK KULA

DEPTH REFERENCE=GROUND LEVEL

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	0.737	69.161	99.997	0.229	0.601	0.229	0.643	69.161	0.737
200.000	0.346	71.297	199.993	0.555	1.489	0.555	1.589	69.568	0.391
300.000	0.195	73.768	299.991	0.699	1.939	0.699	2.061	70.168	0.151
400.000	0.152	54.416	399.991	0.824	2.211	0.824	2.360	69.554	0.072
500.000	0.287	97.768	499.990	0.868	2.567	0.868	2.709	71.322	0.205
600.000	0.387	76.365	599.989	0.914	3.143	0.914	3.273	73.793	0.160
700.000	0.249	104.292	699.987	0.940	3.682	0.940	3.800	75.684	0.204
800.000	0.118	64.274	799.987	0.931	3.985	0.931	4.092	76.856	0.176
900.000	0.092	19.310	899.986	1.051	4.104	1.051	4.236	75.637	0.084
1000.000	0.239	6.192	999.986	1.334	4.153	1.334	4.362	72.193	0.151
1100.000	0.694	38.027	1099.983	2.018	4.548	2.018	4.976	66.076	0.507
1200.000	1.598	33.971	1199.962	3.651	5.701	3.651	6.770	57.360	0.908
1300.000	1.253	8.297	1299.931	5.890	6.638	5.890	8.874	48.416	0.717
1400.000	0.607	8.215	1399.918	7.496	6.871	7.496	10.169	42.509	0.645
1500.000	0.492	331.252	1499.913	8.397	6.741	8.397	10.768	38.755	0.365
1600.000	0.211	53.118	1599.912	8.883	6.681	8.883	11.116	36.948	0.507
1700.000	0.283	101.591	1699.911	8.944	7.071	8.944	11.402	38.327	0.213
1800.000	0.522	84.376	1799.909	8.939	7.766	8.939	11.842	40.983	0.265
1900.000	1.068	124.331	1899.899	8.458	8.989	8.458	12.343	46.744	0.748
2000.000	1.227	104.503	1999.879	7.664	10.796	7.664	13.240	54.629	0.425
2100.000	0.980	136.327	2099.862	6.777	12.424	6.777	14.152	61.387	0.650
2200.000	1.124	113.717	2199.845	5.764	13.912	5.764	15.059	67.496	0.436
2300.000	1.146	112.930	2299.826	4.980	15.732	4.980	16.501	72.436	0.027
2400.000	1.147	84.927	2399.806	4.678	17.650	4.678	18.260	75.154	0.555
2500.000	1.385	89.346	2499.782	4.781	19.856	4.781	20.423	76.462	0.256
2600.000	1.308	99.290	2599.754	4.610	22.190	4.610	22.664	78.263	0.245
2700.000	1.216	86.286	2699.730	4.495	24.375	4.495	24.786	79.552	0.300
2800.000	1.047	85.041	2799.711	4.643	26.344	4.643	26.750	80.006	0.171
2900.000	1.272	88.606	2899.690	4.748	28.364	4.748	28.759	80.496	0.236

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
3000.000	1.162	91.246	2999.668	4.753	30.488	4.753	30.856	81.138	0.123
3100.000	0.887	93.715	3099.652	4.681	32.274	4.681	32.612	81.747	0.279
3200.000	0.990	78.237	3199.638	4.807	33.892	4.807	34.231	81.927	0.273
3300.000	0.436	86.465	3299.630	5.007	35.118	5.007	35.473	81.886	0.562
3400.000	1.289	70.082	3399.618	5.413	36.555	5.413	36.954	81.576	0.879
3500.000	1.538	42.838	3499.589	6.780	38.525	6.780	39.117	80.018	0.708
3600.000	2.227	29.380	3599.535	9.458	40.390	9.458	41.483	76.821	0.815
3700.000	2.375	37.623	3699.454	12.792	42.609	12.792	44.487	73.289	0.362
3800.000	2.299	22.376	3799.372	16.288	44.637	16.288	47.516	69.953	0.624
3900.000	2.780	20.755	3899.274	20.410	46.260	20.410	50.563	66.192	0.485
4000.000	2.761	28.945	3999.157	24.785	48.285	24.785	54.275	62.828	0.396
4100.000	2.390	18.262	4099.057	28.873	50.104	28.873	57.828	60.047	0.605
4200.000	2.154	17.448	4198.978	32.646	51.321	32.646	60.824	57.539	0.238
4300.000	1.735	358.980	4298.921	35.953	51.858	35.953	63.102	55.266	0.749
4400.000	1.884	9.813	4398.871	39.087	52.111	39.087	65.141	53.127	0.372
4500.000	2.733	356.999	4498.790	43.088	52.266	43.088	67.737	50.498	0.988
4600.000	1.808	349.144	4598.711	47.018	51.844	47.018	69.989	47.795	0.974
4700.000	1.982	324.619	4698.658	49.977	50.546	49.977	71.082	45.324	0.823
4800.000	1.980	323.837	4798.598	52.782	48.525	52.782	71.698	42.594	0.027
4900.000	1.418	307.174	4898.554	54.925	46.519	54.925	71.978	40.263	0.743
5000.000	1.212	305.328	4998.528	56.284	44.670	56.284	71.856	38.437	0.210
5100.000	0.989	301.543	5098.509	57.348	43.071	57.348	71.721	36.909	0.235
5200.000	0.672	292.744	5198.498	58.026	41.794	58.026	71.511	35.764	0.341
5300.000	0.263	357.378	5298.495	58.482	41.243	58.482	71.562	35.192	0.608
5400.000	0.553	49.335	5398.493	59.025	41.598	59.025	72.211	35.174	0.443
5500.000	0.781	44.399	5498.486	59.827	42.442	59.827	73.352	35.352	0.235
5600.000	0.914	28.222	5598.475	61.017	43.296	61.017	74.817	35.358	0.272
5700.000	0.441	39.468	5698.468	62.016	43.917	62.016	75.991	35.304	0.489
5800.000	0.763	48.045	5798.463	62.758	44.657	62.758	77.025	35.434	0.334
5900.000	0.367	59.323	5898.458	63.367	45.427	63.367	77.968	35.637	0.410
6000.000	0.132	56.510	5998.457	63.593	45.798	63.593	78.368	35.760	0.235
6100.000	0.290	73.681	6098.456	63.728	46.137	63.728	78.676	35.904	0.169
6200.000	0.347	53.096	6198.454	63.981	46.623	63.981	79.166	36.081	0.127
6300.000	0.051	153.596	6298.454	64.124	46.885	64.124	79.435	36.173	0.360
6400.000	0.107	183.141	6398.454	63.991	46.899	63.991	79.337	36.238	0.068
6500.000	0.283	123.970	6498.453	63.759	47.099	63.759	79.269	36.453	0.246
6600.000	0.362	188.508	6598.452	63.309	47.257	63.309	79.002	36.739	0.351
6700.000	1.257	167.196	6698.441	61.927	47.453	61.927	78.018	37.462	0.930
6800.000	1.568	164.370	6798.410	59.539	48.065	59.539	76.519	38.913	0.319
6900.000	1.486	183.844	6898.376	56.927	48.347	56.927	74.687	40.341	0.523
7000.000	1.621	186.535	6998.339	54.228	48.099	54.228	72.486	41.572	0.153
HORIZONTAL DISPLACEMENT IS 72.486 FEET AT 41.572 DEGREES									