



Company: Noble Energy

Well: Moser H 21-33

API: 05-123-25510

Rig Name: Production/Lightning

Location: Weld County, Colorado

Latitude: 40.207, Longitude: -104.677

GRID North is 0.530 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: moser h 21-33-de_02.ut

Minimum Curvature Method

Report Date/Time: 9/21/2012 / 14:37

Vaughn Energy Services

Henderson, CO.

Justin Williams

303-853-4976

RKB = 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	0.611	179.056	99.998	-0.533	0.009	-0.533	0.534	179.056	0.611
200.000	0.620	140.289	199.993	-1.483	0.363	-1.483	1.527	166.242	0.409
300.000	0.467	200.789	299.989	-2.280	0.564	-2.280	2.349	166.107	0.563
400.000	0.688	176.831	399.984	-3.261	0.453	-3.261	3.292	172.099	0.323
500.000	0.836	193.858	499.975	-4.569	0.311	-4.569	4.579	176.106	0.269
600.000	0.852	207.028	599.964	-5.940	-0.202	-5.940	5.943	181.945	0.194
700.000	0.343	226.367	699.959	-6.809	-0.756	-6.809	6.851	186.340	0.541
800.000	0.732	228.171	799.954	-7.441	-1.449	-7.441	7.581	191.019	0.389
900.000	0.546	210.592	899.948	-8.277	-2.167	-8.277	8.556	194.673	0.268
1000.000	0.704	215.450	999.942	-9.188	-2.766	-9.188	9.595	196.755	0.167
1100.000	0.744	249.275	1099.935	-9.918	-3.729	-9.918	10.596	200.608	0.423
1200.000	0.970	255.236	1199.923	-10.363	-5.155	-10.363	11.575	206.448	0.243
1300.000	0.660	255.442	1299.913	-10.724	-6.531	-10.724	12.556	211.343	0.311
1400.000	0.934	240.356	1399.903	-11.272	-7.797	-11.272	13.706	214.673	0.343
1500.000	0.936	241.349	1499.890	-12.067	-9.222	-12.067	15.187	217.390	0.016
1600.000	0.815	268.679	1599.879	-12.475	-10.650	-12.475	16.402	220.488	0.430
1700.000	1.269	247.350	1699.862	-12.917	-12.383	-12.917	17.894	223.789	0.590
1800.000	1.224	236.272	1799.839	-13.937	-14.293	-13.937	19.963	225.723	0.245
1900.000	1.291	256.567	1899.815	-14.792	-16.277	-14.792	21.994	227.737	0.448
2000.000	0.842	273.244	1999.798	-15.012	-18.106	-15.012	23.520	230.338	0.541
2100.000	1.154	259.764	2099.783	-15.149	-19.830	-15.149	24.955	232.622	0.388
2200.000	0.615	252.528	2199.771	-15.489	-21.332	-15.489	26.362	234.017	0.549
2300.000	0.891	271.481	2299.762	-15.630	-22.621	-15.630	27.496	235.358	0.369
2400.000	0.973	286.576	2399.749	-15.367	-24.213	-15.367	28.678	237.597	0.258
2500.000	0.902	335.840	2499.737	-14.407	-25.349	-14.407	29.157	240.388	0.784
2600.000	1.153	14.389	2599.722	-12.715	-25.421	-12.715	28.423	243.427	0.719
2700.000	0.996	27.835	2699.705	-10.971	-24.765	-10.971	27.086	246.106	0.296
2800.000	0.865	20.421	2799.691	-9.495	-24.095	-9.495	25.899	248.493	0.178
2900.000	0.920	30.044	2899.679	-8.092	-23.430	-8.092	24.788	250.946	0.159
3000.000	0.572	54.902	2999.671	-7.110	-22.619	-7.110	23.710	252.550	0.467
3100.000	0.541	76.380	3099.666	-6.712	-21.752	-6.712	22.764	252.852	0.210
3200.000	0.785	65.277	3199.660	-6.314	-20.671	-6.314	21.613	253.014	0.274
3300.000	0.848	7.937	3299.651	-5.295	-19.946	-5.295	20.637	255.134	0.785
3400.000	1.198	352.702	3399.635	-3.525	-19.977	-3.525	20.286	259.992	0.440

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
3500.000	1.294	349.479	3499.611	-1.379	-20.316	-1.379	20.362	266.117	0.119
3600.000	1.431	342.208	3599.583	0.920	-20.903	0.920	20.924	272.520	0.221
3700.000	1.595	351.992	3699.548	3.487	-21.479	3.487	21.760	279.221	0.305
3800.000	2.037	356.462	3799.498	6.639	-21.782	6.639	22.772	286.951	0.464
3900.000	1.717	345.826	3899.445	9.865	-22.259	9.865	24.347	293.903	0.472
4000.000	1.661	330.668	3999.402	12.582	-23.336	12.582	26.512	298.331	0.449
4100.000	2.105	324.362	4099.347	15.338	-25.116	15.338	29.429	301.412	0.489
4200.000	1.995	342.524	4199.284	18.492	-26.709	18.492	32.486	304.696	0.656
4300.000	2.135	354.113	4299.220	22.005	-27.423	22.005	35.161	308.745	0.439
4400.000	2.119	349.155	4399.151	25.674	-27.962	25.674	37.961	312.557	0.185
4500.000	2.333	328.023	4499.077	29.216	-29.388	29.216	41.439	314.832	0.843
4600.000	2.452	342.065	4598.991	32.977	-31.124	32.977	45.346	316.656	0.597
4700.000	2.618	331.277	4698.894	37.015	-32.881	37.015	49.510	318.385	0.504
4800.000	2.876	346.012	4798.780	41.453	-34.585	41.453	53.985	320.161	0.749
4900.000	2.683	342.499	4898.662	46.120	-35.895	46.120	58.442	322.106	0.257
5000.000	2.099	357.085	4998.576	50.181	-36.692	50.181	62.165	323.826	0.839
5100.000	1.981	351.551	5098.512	53.721	-37.039	53.721	65.252	325.415	0.230
5200.000	1.969	343.433	5198.453	57.077	-37.783	57.077	68.450	326.497	0.280
5300.000	1.918	343.254	5298.396	60.327	-38.755	60.327	71.703	327.282	0.052
5400.000	1.534	338.695	5398.350	63.176	-39.724	63.176	74.627	327.839	0.407
5500.000	1.793	342.665	5498.308	65.917	-40.676	65.917	77.457	328.322	0.283
5600.000	1.626	349.886	5598.263	68.807	-41.391	68.807	80.297	328.971	0.272
5700.000	1.634	3.863	5698.223	71.626	-41.545	71.626	82.803	329.886	0.397
5800.000	1.344	25.538	5798.190	74.108	-40.943	74.108	84.666	331.080	0.628
5900.000	1.560	3.453	5898.159	76.525	-40.355	76.525	86.513	332.195	0.595
6000.000	1.386	10.595	5998.126	79.072	-40.051	79.072	88.637	333.137	0.252
6100.000	1.459	11.778	6098.095	81.507	-39.569	81.507	90.604	334.105	0.078
6200.000	1.367	13.603	6198.065	83.913	-39.028	83.913	92.545	335.057	0.102
6300.000	1.345	8.245	6298.037	86.233	-38.579	86.233	94.470	335.897	0.129
6400.000	1.388	12.740	6398.008	88.576	-38.144	88.576	96.440	336.702	0.115
6500.000	1.351	14.475	6497.980	90.899	-37.582	90.899	98.362	337.537	0.055
6600.000	1.252	26.200	6597.954	93.021	-36.805	93.021	100.038	338.413	0.284
6700.000	1.073	17.570	6697.934	94.894	-36.040	94.894	101.508	339.204	0.250
6800.000	1.049	22.353	6797.916	96.633	-35.410	96.633	102.916	339.875	0.092
6900.000	0.684	26.814	6897.905	98.012	-34.792	98.012	104.004	340.456	0.370
7000.000	0.675	51.104	6997.898	98.915	-34.064	98.915	104.616	340.997	0.286
7100.000	0.858	109.681	7097.890	99.033	-32.901	99.033	104.355	341.622	0.766
HORIZONTAL DISPLACEMENT IS 104.355 FEET AT 341.622 DEGREES									