

VES

VAUGHN ENERGY SERVICES

Company: NOBLE ENERGY
Lease/Well: MCGUCKIN H/ # 32-13

Location:

Rig Name: PRODUCTION

State/County: COLORADO/WELD COUNTY

Latitude: 40.17

GRID North is 0.53 Degrees East of True North

VS-Azi: 0.00 Degrees

GTI

GYRO TECHNOLOGIES INC

FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : GL

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: run2-01.ut

Minimum Curvature Method

Report Date/Time: 6/7/2011 / 17:20

Vaughn Energy Services

Rifle, Colorado

303-489-9231

Jay Hinman

Mcguckin H 32-13/05-123-24834

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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.19	23.59	100.00	0.15	0.07	0.15	0.17	23.59	0.19
200.00	0.19	303.52	200.00	0.40	0.00	0.40	0.40	359.38	0.25
300.00	0.20	311.60	300.00	0.61	-0.27	0.61	0.67	335.71	0.03
400.00	0.15	314.36	400.00	0.82	-0.50	0.82	0.96	328.50	0.05
500.00	0.27	318.70	500.00	1.09	-0.75	1.09	1.32	325.32	0.12
600.00	0.15	324.84	600.00	1.38	-0.99	1.38	1.70	324.35	0.13
700.00	0.35	321.22	700.00	1.72	-1.25	1.72	2.13	323.93	0.20
800.00	0.68	311.78	799.99	2.35	-1.88	2.35	3.01	321.30	0.34
900.00	0.76	309.71	899.98	3.16	-2.83	3.16	4.24	318.19	0.09
1000.00	0.69	304.23	999.98	3.92	-3.83	3.92	5.49	315.66	0.10
1100.00	0.63	305.74	1099.97	4.58	-4.78	4.58	6.62	313.80	0.06
1200.00	0.62	306.49	1199.96	5.23	-5.66	5.23	7.71	312.71	0.01
1300.00	0.64	317.13	1299.96	5.96	-6.48	5.96	8.81	312.61	0.12
1400.00	0.71	317.99	1399.95	6.83	-7.28	6.83	9.98	313.20	0.07
1500.00	0.82	318.81	1499.94	7.84	-8.17	7.84	11.32	313.82	0.11
1600.00	1.37	321.67	1599.92	9.31	-9.38	9.31	13.22	314.79	0.55
1700.00	1.58	321.34	1699.89	11.33	-10.98	11.33	15.78	315.89	0.21
1800.00	1.51	328.49	1799.85	13.53	-12.54	13.53	18.45	317.19	0.21
1900.00	1.55	327.98	1899.82	15.81	-13.94	15.81	21.08	318.58	0.04
2000.00	1.42	328.99	1999.78	18.02	-15.30	18.02	23.64	319.66	0.14
2100.00	1.48	335.56	2099.75	20.25	-16.47	20.25	26.11	320.88	0.18
2200.00	1.29	332.65	2199.72	22.43	-17.53	22.43	28.47	322.00	0.20
2300.00	1.23	325.64	2299.70	24.32	-18.65	24.32	30.65	322.52	0.17
2400.00	1.11	322.44	2399.68	25.97	-19.85	25.97	32.69	322.62	0.14
2500.00	0.60	347.69	2499.67	27.25	-20.55	27.25	34.13	322.98	0.62
2600.00	0.90	56.39	2599.66	28.20	-20.00	28.20	34.57	324.65	0.89
2700.00	1.10	53.69	2699.64	29.21	-18.57	29.21	34.61	327.55	0.20
2800.00	0.95	53.55	2799.63	30.27	-17.12	30.27	34.78	330.50	0.15
2900.00	0.73	41.83	2899.62	31.24	-16.03	31.24	35.11	332.83	0.28
3000.00	0.55	39.37	2999.61	32.08	-15.30	32.08	35.54	334.50	0.18
3100.00	0.32	30.79	3099.61	32.69	-14.86	32.69	35.91	335.56	0.24
3200.00	0.26	222.90	3199.61	32.77	-14.87	32.77	35.98	335.60	0.58
3300.00	0.46	216.54	3299.61	32.28	-15.26	32.28	35.71	334.70	0.20
3400.00	0.64	213.54	3399.60	31.50	-15.80	31.50	35.24	333.35	0.18

<i>Measured Depth FT</i>	<i>Incl Angle Deg</i>	<i>Drift Direction Deg</i>	<i>TVD FT</i>	<i>+N/-S FT</i>	<i>+E/-W FT</i>	<i>Vertical Section FT</i>	<i>Closure Distance FT</i>	<i>Closure Direction Deg</i>	<i>Dogleg Severity Deg/100</i>
3500.00	0.62	204.34	3499.59	30.54	-16.33	30.54	34.64	331.86	0.10
3600.00	0.68	204.29	3599.59	29.51	-16.80	29.51	33.96	330.35	0.06
3700.00	0.35	203.42	3699.58	28.69	-17.16	28.69	33.43	329.11	0.33
3800.00	0.46	198.69	3799.58	28.03	-17.41	28.03	33.00	328.15	0.12
3900.00	0.57	182.58	3899.58	27.15	-17.57	27.15	32.34	327.10	0.18
4000.00	0.35	183.24	3999.57	26.36	-17.61	26.36	31.70	326.26	0.22
4100.00	0.39	197.57	4099.57	25.73	-17.73	25.73	31.25	325.44	0.10
4200.00	0.07	200.39	4199.57	25.35	-17.85	25.35	31.00	324.85	0.32
4300.00	0.11	213.16	4299.57	25.21	-17.93	25.21	30.93	324.58	0.05
4400.00	0.38	221.27	4399.57	24.88	-18.20	24.88	30.82	323.81	0.27
4500.00	0.41	228.31	4499.57	24.39	-18.69	24.39	30.72	322.54	0.06
4600.00	0.46	231.77	4599.57	23.90	-19.27	23.90	30.70	321.12	0.06
4700.00	0.59	239.10	4699.56	23.39	-20.03	23.39	30.79	319.42	0.14
4800.00	0.46	242.12	4799.56	22.94	-20.82	22.94	30.98	317.77	0.13
4900.00	0.55	234.20	4899.55	22.47	-21.56	22.47	31.14	316.19	0.11
5000.00	0.60	223.91	4999.55	21.82	-22.31	21.82	31.20	314.36	0.11
5100.00	0.71	220.49	5099.54	20.97	-23.07	20.97	31.18	312.27	0.12
5200.00	0.80	212.35	5199.53	19.92	-23.84	19.92	31.06	309.87	0.14
5300.00	0.78	204.37	5299.52	18.71	-24.49	18.71	30.82	307.38	0.11
5400.00	0.60	193.53	5399.52	17.59	-24.89	17.59	30.48	305.24	0.22
5500.00	0.52	208.71	5499.51	16.68	-25.24	16.68	30.25	303.46	0.17
5600.00	0.14	217.20	5599.51	16.18	-25.53	16.18	30.22	302.37	0.39
5700.00	0.27	225.48	5699.51	15.92	-25.77	15.92	30.29	301.70	0.14
5800.00	0.22	228.43	5799.51	15.62	-26.09	15.62	30.41	300.91	0.05
5900.00	0.58	234.00	5899.51	15.19	-26.65	15.19	30.67	299.69	0.36
6000.00	0.57	262.33	5999.50	14.83	-27.55	14.83	31.29	298.29	0.28
6100.00	0.15	47.05	6099.50	14.85	-27.95	14.85	31.65	297.98	0.69
6200.00	0.71	22.28	6199.50	15.51	-27.62	15.51	31.67	299.32	0.58
6300.00	1.02	17.21	6299.48	16.94	-27.12	16.94	31.97	301.99	0.32
6400.00	0.77	3.54	6399.47	18.46	-26.81	18.46	32.55	304.54	0.33
6500.00	0.73	330.90	6499.46	19.68	-27.08	19.68	33.48	306.00	0.42
6600.00	1.09	324.52	6599.45	21.01	-27.94	21.01	34.96	306.94	0.37
6700.00	1.65	309.62	6699.42	22.70	-29.61	22.70	37.31	307.48	0.66
6800.00	2.04	299.78	6799.37	24.51	-32.26	24.51	40.51	307.22	0.50
6900.00	2.48	298.54	6899.29	26.43	-35.71	26.43	44.43	306.50	0.44
7000.00	2.86	291.52	6999.18	28.38	-39.94	28.38	48.99	305.40	0.50
7100.00	2.97	290.10	7099.05	30.18	-44.69	30.18	53.93	304.03	0.13
7200.00	3.30	286.12	7198.90	31.87	-49.89	31.87	59.20	302.57	0.39
7250.00	3.44	288.52	7248.82	32.75	-52.69	32.75	62.04	301.86	0.39

HORIZONTAL DISPLACEMENT IS
62.04 FEET AT 301.86 DEGREES