

VES

VAUGHN ENERGY SERVICES

Company: Noble Energy

Lease/Well: Dinnel / 2

Location: S-26 T-4N R-64W

Rig Name: Production

State/County: Colorado / Weld County

Latitude: 40.29, Longitude: -104.52

GRID North is 0.63 Degrees East of True North

VS-Azi: 0.00 Degrees

GTI

GYRO TECHNOLOGIES, INC

FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB = Ground Level

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: inrun_ed.ut

Minimum Curvature Method

Report Date/Time: 3/15/2011 / 13:15

Vaughn Energy Services

Denver, CO

720-215-1841

Robert Davis

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	0.54	123.32	100.00	-0.26	0.39	-0.26	0.47	123.32	0.54
200.00	0.22	65.47	200.00	-0.44	0.95	-0.44	1.05	114.54	0.46
300.00	0.23	20.26	300.00	-0.17	1.20	-0.17	1.21	97.86	0.17
400.00	0.38	304.73	399.99	0.22	0.99	0.22	1.02	77.73	0.39
500.00	0.69	323.39	499.99	0.89	0.36	0.89	0.96	22.30	0.35
600.00	0.72	322.47	599.98	1.87	-0.38	1.87	1.90	348.61	0.03
700.00	0.78	329.70	699.97	2.95	-1.10	2.95	3.15	339.54	0.11
800.00	0.74	350.27	799.97	4.17	-1.55	4.17	4.45	339.59	0.27
900.00	0.78	334.04	899.96	5.43	-1.96	5.43	5.77	340.12	0.22
1000.00	0.74	346.56	999.95	6.67	-2.41	6.67	7.09	340.12	0.17
1100.00	0.63	356.06	1099.94	7.84	-2.60	7.84	8.26	341.67	0.15
1200.00	0.38	346.18	1199.94	8.71	-2.72	8.71	9.13	342.69	0.26
1300.00	0.42	3.66	1299.93	9.40	-2.77	9.40	9.80	343.57	0.13
1400.00	0.50	13.85	1399.93	10.19	-2.64	10.19	10.52	345.45	0.11
1500.00	0.71	337.71	1499.93	11.18	-2.77	11.18	11.52	346.07	0.42
1600.00	0.92	359.31	1599.92	12.55	-3.02	12.55	12.91	346.48	0.37
1700.00	0.85	8.29	1699.90	14.09	-2.92	14.09	14.38	348.29	0.15
1800.00	0.68	7.03	1799.90	15.41	-2.74	15.41	15.65	349.91	0.18
1900.00	0.84	10.53	1899.89	16.71	-2.53	16.71	16.90	351.37	0.17
2000.00	0.59	10.04	1999.88	17.94	-2.31	17.94	18.09	352.66	0.24
2100.00	0.84	18.55	2099.87	19.14	-1.99	19.14	19.24	354.07	0.26
2200.00	0.91	10.15	2199.86	20.62	-1.62	20.62	20.68	355.52	0.15
2300.00	1.67	27.57	2299.83	22.70	-0.80	22.70	22.71	357.98	0.84
2400.00	2.13	30.23	2399.78	25.59	0.81	25.59	25.61	1.81	0.47
2500.00	1.90	36.84	2499.72	28.53	2.74	28.53	28.66	5.49	0.33
2600.00	1.78	31.49	2599.67	31.18	4.55	31.18	31.51	8.30	0.21
2700.00	1.06	42.36	2699.63	33.19	5.98	33.19	33.72	10.21	0.76
2800.00	0.70	32.60	2799.62	34.39	6.93	34.39	35.08	11.40	0.38
2900.00	0.55	125.15	2899.62	34.63	7.66	34.63	35.46	12.47	0.91
3000.00	1.36	164.05	2999.60	33.21	8.38	33.21	34.25	14.15	0.99
3100.00	2.02	187.16	3099.56	30.32	8.48	30.32	31.49	15.63	0.94
3200.00	2.23	191.52	3199.49	26.67	7.87	26.67	27.80	16.45	0.26
3300.00	2.36	208.87	3299.41	22.96	6.49	22.96	23.86	15.79	0.70
3400.00	2.52	228.31	3399.33	19.70	3.86	19.70	20.08	11.09	0.84

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
3500.00	2.25	228.38	3499.24	16.94	0.75	16.94	16.96	2.55	0.27
3600.00	2.33	236.69	3599.16	14.52	-2.41	14.52	14.72	350.58	0.34
3700.00	2.27	234.35	3699.08	12.25	-5.72	12.25	13.52	334.98	0.11
3800.00	2.17	225.56	3799.00	9.77	-8.68	9.77	13.07	318.37	0.36
3900.00	1.60	222.86	3898.95	7.42	-10.98	7.42	13.25	304.03	0.58
4000.00	1.14	224.20	3998.92	5.68	-12.63	5.68	13.85	294.23	0.46
4100.00	0.62	203.91	4098.91	4.47	-13.54	4.47	14.26	288.28	0.59
4200.00	0.64	107.98	4198.90	3.80	-13.23	3.80	13.77	286.03	0.94
4300.00	0.55	90.99	4298.90	3.62	-12.23	3.62	12.75	286.50	0.20
4400.00	0.93	80.13	4398.89	3.75	-10.95	3.75	11.58	288.92	0.41
4500.00	1.28	105.28	4498.87	3.60	-9.08	3.60	9.76	291.63	0.59
4600.00	0.63	148.36	4598.86	2.84	-7.71	2.84	8.22	290.20	0.92
4700.00	0.44	182.88	4698.86	1.98	-7.44	1.98	7.70	284.93	0.37
4800.00	0.73	191.31	4798.85	0.98	-7.59	0.98	7.65	277.34	0.30
4900.00	0.56	192.78	4898.84	-0.12	-7.82	-0.12	7.82	269.11	0.17
5000.00	0.54	190.98	4998.84	-1.06	-8.02	-1.06	8.09	262.49	0.03
5100.00	0.22	161.22	5098.84	-1.70	-8.05	-1.70	8.22	258.10	0.37
5200.00	0.73	145.66	5198.83	-2.40	-7.62	-2.40	7.99	252.52	0.53
5300.00	0.87	129.14	5298.82	-3.41	-6.67	-3.41	7.49	242.94	0.27
5400.00	0.89	151.63	5398.81	-4.57	-5.72	-4.57	7.32	231.35	0.34
5500.00	0.68	109.75	5498.80	-5.45	-4.79	-5.45	7.26	221.28	0.59
5600.00	0.47	129.38	5598.80	-5.91	-3.91	-5.91	7.09	213.49	0.29
5700.00	0.65	119.59	5698.79	-6.45	-3.11	-6.45	7.16	205.71	0.20
5800.00	0.39	122.69	5798.79	-6.91	-2.33	-6.91	7.29	198.60	0.26
5900.00	0.26	123.50	5898.79	-7.22	-1.85	-7.22	7.45	194.40	0.14
6000.00	0.29	97.90	5998.79	-7.38	-1.42	-7.38	7.51	190.87	0.13
6100.00	0.65	54.61	6098.78	-7.08	-0.70	-7.08	7.12	185.66	0.48
6200.00	0.95	54.46	6198.77	-6.27	0.43	-6.27	6.29	176.05	0.29
6300.00	0.97	61.76	6298.76	-5.39	1.85	-5.39	5.70	161.07	0.12
6400.00	1.19	85.43	6398.74	-4.91	3.63	-4.91	6.11	143.54	0.49
6500.00	1.80	109.38	6498.71	-5.35	6.14	-5.35	8.15	131.05	0.86
6600.00	1.90	95.49	6598.66	-6.03	9.28	-6.03	11.06	123.03	0.46
6700.00	1.51	104.57	6698.61	-6.52	12.21	-6.52	13.84	118.11	0.47
HORIZONTAL DISPLACEMENT IS 13.84 FEET AT 118.11 DEGREES									