

VES

VAUGHN ENERGY SERVICES

Company: Noble Energy

Lease/Well: Tania Blue D / 2-10

Location: S-2 T-3N R-64W

Rig Name: Production

State/County: Colorado / Weld County

Latitude: 40.25, Longitude: -104.52

GRID North is 0.64 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: 5/5/2011 / 21:31

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	0.31	257.09	100.00	-0.06	-0.26	-0.06	0.27	257.09	0.31
200.00	0.64	252.38	200.00	-0.29	-1.06	-0.29	1.10	254.71	0.33
300.00	0.54	228.23	299.99	-0.77	-1.94	-0.77	2.09	248.28	0.26
400.00	0.46	261.53	399.99	-1.15	-2.69	-1.15	2.93	246.90	0.30
500.00	0.48	220.22	499.98	-1.53	-3.36	-1.53	3.69	245.54	0.33
600.00	0.34	194.95	599.98	-2.14	-3.71	-2.14	4.28	240.06	0.23
700.00	0.58	234.92	699.98	-2.71	-4.20	-2.71	5.00	237.14	0.39
800.00	0.48	177.99	799.97	-3.42	-4.60	-3.42	5.74	233.35	0.51
900.00	0.48	241.33	899.97	-4.04	-4.96	-4.04	6.40	230.79	0.50
1000.00	0.78	222.31	999.97	-4.75	-5.79	-4.75	7.49	230.61	0.36
1100.00	0.81	210.20	1099.96	-5.87	-6.61	-5.87	8.84	228.37	0.17
1200.00	0.58	212.02	1199.95	-6.91	-7.23	-6.91	10.00	226.29	0.23
1300.00	0.96	243.47	1299.94	-7.72	-8.25	-7.72	11.30	226.90	0.55
1400.00	0.87	219.32	1399.93	-8.68	-9.47	-8.68	12.85	227.52	0.39
1500.00	1.09	247.45	1499.91	-9.63	-10.84	-9.63	14.49	228.38	0.53
1600.00	0.75	231.81	1599.90	-10.40	-12.23	-10.40	16.05	229.63	0.43
1700.00	0.53	250.45	1699.89	-10.95	-13.17	-10.95	17.13	230.26	0.30
1800.00	0.92	254.83	1799.89	-11.31	-14.38	-11.31	18.30	231.80	0.40
1900.00	0.81	290.56	1899.88	-11.28	-15.82	-11.28	19.42	234.51	0.54
2000.00	0.71	274.16	1999.87	-10.98	-17.10	-10.98	20.32	237.29	0.24
2100.00	0.56	269.95	2099.86	-10.94	-18.21	-10.94	21.24	239.00	0.16
2200.00	0.39	167.99	2199.86	-11.27	-18.62	-11.27	21.77	238.81	0.75
2300.00	0.60	132.31	2299.86	-11.96	-18.17	-11.96	21.75	236.64	0.36
2400.00	0.84	140.00	2399.85	-12.87	-17.31	-12.87	21.57	233.36	0.27
2500.00	1.54	111.09	2499.83	-13.92	-15.58	-13.92	20.90	228.23	0.90
2600.00	1.89	103.65	2599.78	-14.79	-12.73	-14.79	19.52	220.72	0.41
2700.00	2.02	98.89	2699.72	-15.45	-9.39	-15.45	18.08	211.30	0.21
2800.00	1.84	108.86	2799.67	-16.24	-6.14	-16.24	17.36	200.69	0.38
2900.00	1.86	106.70	2899.61	-17.23	-3.06	-17.23	17.50	190.06	0.07
3000.00	1.66	120.00	2999.57	-18.42	-0.25	-18.42	18.42	180.77	0.46
3100.00	1.49	116.67	3099.53	-19.72	2.16	-19.72	19.84	173.74	0.19
3200.00	1.30	122.03	3199.50	-20.91	4.29	-20.91	21.34	168.42	0.23
3300.00	1.54	127.02	3299.47	-22.32	6.33	-22.32	23.20	164.18	0.27
3400.00	1.92	143.93	3399.42	-24.49	8.39	-24.49	25.89	161.09	0.63

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	1.77	151.47	3499.37	-27.21	10.12	-27.21	29.03	159.60	0.29
3600.00	1.50	172.31	3599.33	-29.86	11.03	-29.86	31.84	159.73	0.65
3700.00	1.31	162.00	3699.30	-32.25	11.56	-32.25	34.26	160.28	0.31
3800.00	1.15	174.21	3799.28	-34.34	12.02	-34.34	36.38	160.72	0.31
3900.00	0.86	195.95	3899.26	-36.06	11.91	-36.06	37.97	161.72	0.47
4000.00	0.98	180.47	3999.25	-37.63	11.70	-37.63	39.41	162.73	0.28
4100.00	0.57	189.31	4099.24	-38.98	11.61	-38.98	40.68	163.42	0.42
4200.00	0.57	210.72	4199.24	-39.90	11.28	-39.90	41.47	164.22	0.21
4300.00	0.32	223.77	4299.23	-40.53	10.83	-40.53	41.95	165.04	0.26
4400.00	0.32	223.34	4399.23	-40.94	10.44	-40.94	42.25	165.69	0.00
4500.00	0.68	174.94	4499.23	-41.73	10.30	-41.73	42.99	166.13	0.53
4600.00	0.12	300.66	4599.23	-42.27	10.27	-42.27	43.50	166.35	0.76
4700.00	0.70	213.42	4699.22	-42.73	9.84	-42.73	43.85	167.03	0.70
4800.00	0.42	129.14	4799.22	-43.47	9.79	-43.47	44.56	167.31	0.78
4900.00	0.69	200.36	4899.22	-44.27	9.87	-44.27	45.36	167.43	0.69
5000.00	0.44	186.00	4999.21	-45.22	9.62	-45.22	46.24	167.99	0.28
5100.00	0.63	176.41	5099.21	-46.16	9.61	-46.16	47.15	168.24	0.21
5200.00	0.35	155.10	5199.20	-46.99	9.78	-46.99	48.00	168.25	0.33
5300.00	0.49	148.08	5299.20	-47.64	10.13	-47.64	48.70	167.99	0.15
5400.00	0.55	131.22	5399.20	-48.32	10.72	-48.32	49.49	167.49	0.16
5500.00	0.77	117.23	5499.19	-48.94	11.68	-48.94	50.31	166.58	0.27
5600.00	0.91	124.52	5599.18	-49.70	12.93	-49.70	51.35	165.42	0.18
5700.00	1.16	108.83	5699.16	-50.48	14.54	-50.48	52.53	163.93	0.37
5800.00	0.80	132.48	5799.15	-51.27	16.01	-51.27	53.72	162.65	0.53
5900.00	0.81	131.03	5899.14	-52.21	17.06	-52.21	54.93	161.90	0.02
6000.00	0.24	129.71	5999.13	-52.80	17.75	-52.80	55.71	161.42	0.57
6100.00	0.76	45.02	6099.13	-52.47	18.38	-52.47	55.59	160.70	0.77
6200.00	1.03	59.75	6199.12	-51.55	19.62	-51.55	55.16	159.16	0.36
6300.00	1.24	45.06	6299.10	-50.33	21.16	-50.33	54.60	157.20	0.35
6400.00	1.51	46.07	6399.07	-48.66	22.87	-48.66	53.77	154.83	0.27
6500.00	1.78	34.86	6499.03	-46.48	24.70	-46.48	52.64	152.01	0.42
6600.00	1.29	43.38	6598.99	-44.39	26.36	-44.39	51.63	149.29	0.54
6700.00	2.10	39.48	6698.95	-42.16	28.30	-42.16	50.77	146.12	0.82
6800.00	1.46	28.40	6798.90	-39.62	30.07	-39.62	49.74	142.80	0.72
HORIZONTAL DISPLACEMENT IS 49.74 FEET AT 142.80 DEGREES									