

VES

VAUGHN ENERGY SERVICES

Company: Noble Energy
 Lease/Well: UPRC / 13-6J
 Location: S-13 T-3N R-65W

Rig Name: Production
 State/County: Colorado / Weld County

Latitude: 40.23, Longitude: -104.61
 GRID North is 0.57 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: 3/9/2011 / 19:50

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	0.46	227.33	100.00	-0.27	-0.30	-0.27	0.40	227.33	0.46
200.00	0.41	90.37	200.00	-0.55	-0.23	-0.55	0.59	202.69	0.81
300.00	0.31	113.44	300.00	-0.65	0.38	-0.65	0.76	150.02	0.18
400.00	0.30	336.18	400.00	-0.52	0.52	-0.52	0.73	135.29	0.56
500.00	0.65	65.65	499.99	-0.05	0.93	-0.05	0.93	93.04	0.71
600.00	0.61	77.15	599.99	0.30	1.97	0.30	1.99	81.23	0.13
700.00	0.40	31.91	699.98	0.72	2.67	0.72	2.77	74.99	0.44
800.00	0.69	28.74	799.98	1.54	3.15	1.54	3.50	63.90	0.30
900.00	0.83	30.18	899.97	2.70	3.80	2.70	4.66	54.63	0.14
1000.00	0.88	39.08	999.96	3.92	4.65	3.92	6.08	49.86	0.14
1100.00	0.71	28.82	1099.95	5.06	5.43	5.06	7.43	47.02	0.22
1200.00	0.63	71.38	1199.94	5.79	6.26	5.79	8.52	47.23	0.49
1300.00	0.83	50.08	1299.93	6.42	7.33	6.42	9.75	48.77	0.33
1400.00	0.63	67.23	1399.93	7.10	8.39	7.10	10.99	49.76	0.29
1500.00	0.25	26.47	1499.92	7.51	8.99	7.51	11.71	50.15	0.47
1600.00	0.30	337.01	1599.92	7.94	8.99	7.94	11.99	48.54	0.23
1700.00	0.52	359.33	1699.92	8.63	8.88	8.63	12.39	45.82	0.27
1800.00	0.29	14.98	1799.92	9.33	8.94	9.33	12.92	43.78	0.25
1900.00	0.35	285.24	1899.92	9.66	8.72	9.66	13.01	42.07	0.45
2000.00	0.62	317.84	1999.91	10.13	8.06	10.13	12.95	38.51	0.37
2100.00	0.41	276.15	2099.91	10.57	7.35	10.57	12.88	34.82	0.41
2200.00	1.05	286.48	2199.90	10.87	6.12	10.87	12.47	29.38	0.65
2300.00	0.98	302.94	2299.89	11.60	4.52	11.60	12.44	21.30	0.30
2400.00	1.08	291.63	2399.87	12.41	2.93	12.41	12.75	13.27	0.22
2500.00	1.25	293.56	2499.85	13.19	1.05	13.19	13.23	4.56	0.18
2600.00	1.40	295.71	2599.82	14.16	-1.05	14.16	14.20	355.76	0.16
2700.00	1.33	287.93	2699.79	15.04	-3.25	15.04	15.39	347.80	0.20
2800.00	1.67	291.98	2799.76	15.95	-5.71	15.95	16.94	340.30	0.35
2900.00	1.67	287.32	2899.72	16.92	-8.45	16.92	18.92	333.48	0.14
3000.00	1.53	282.19	2999.68	17.64	-11.14	17.64	20.86	327.73	0.20
3100.00	1.56	285.29	3099.64	18.28	-13.75	18.28	22.87	323.04	0.09
3200.00	1.46	280.74	3199.61	18.87	-16.31	18.87	24.95	319.16	0.16
3300.00	0.78	250.31	3299.59	18.88	-18.20	18.88	26.23	316.05	0.88
3400.00	0.73	240.77	3399.58	18.34	-19.40	18.34	26.70	313.40	0.14

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	0.43	232.44	3499.57	17.80	-20.25	17.80	26.96	311.32	0.30
3600.00	0.19	217.64	3599.57	17.44	-20.65	17.44	27.03	310.18	0.25
3700.00	0.62	210.24	3699.57	16.84	-21.03	16.84	26.94	308.69	0.43
3800.00	0.48	212.58	3799.57	16.02	-21.53	16.02	26.83	306.66	0.14
3900.00	0.51	179.84	3899.56	15.22	-21.75	15.22	26.55	304.98	0.28
4000.00	0.67	213.56	3999.56	14.29	-22.07	14.29	26.29	302.91	0.38
4100.00	0.56	208.11	4099.55	13.36	-22.63	13.36	26.28	300.56	0.12
4200.00	0.95	206.63	4199.54	12.19	-23.23	12.19	26.24	297.68	0.39
4300.00	1.54	197.83	4299.52	10.16	-24.02	10.16	26.08	292.94	0.62
4400.00	2.22	197.97	4399.46	7.04	-25.03	7.04	26.00	285.72	0.67
4500.00	2.07	200.08	4499.39	3.51	-26.24	3.51	26.48	277.61	0.16
4600.00	1.59	209.13	4599.34	0.59	-27.54	0.59	27.55	271.23	0.56
4700.00	1.52	228.08	4699.31	-1.51	-29.20	-1.51	29.24	267.04	0.52
4800.00	1.63	253.08	4799.27	-2.80	-31.55	-2.80	31.67	264.92	0.69
4900.00	1.96	273.32	4899.22	-3.12	-34.61	-3.12	34.75	264.85	0.71
5000.00	1.66	289.58	4999.17	-2.54	-37.67	-2.54	37.76	266.15	0.59
5100.00	2.17	271.95	5099.12	-1.99	-40.93	-1.99	40.98	267.22	0.78
5200.00	1.75	284.83	5199.06	-1.53	-44.31	-1.53	44.33	268.02	0.61
5300.00	1.14	295.66	5299.03	-0.71	-46.68	-0.71	46.68	269.13	0.67
5400.00	1.24	290.98	5399.01	0.11	-48.58	0.11	48.58	270.13	0.14
5500.00	1.99	280.86	5498.96	0.82	-51.30	0.82	51.31	270.92	0.80
5600.00	1.78	282.70	5598.91	1.49	-54.53	1.49	54.55	271.57	0.22
5700.00	1.49	306.96	5698.87	2.62	-57.09	2.62	57.15	272.62	0.75
5800.00	1.32	280.62	5798.84	3.61	-59.26	3.61	59.37	273.49	0.66
5900.00	1.07	301.84	5898.82	4.32	-61.18	4.32	61.33	274.03	0.50
6000.00	1.26	274.40	5998.80	4.89	-63.07	4.89	63.26	274.44	0.58
6100.00	1.64	275.66	6098.77	5.12	-65.59	5.12	65.79	274.46	0.38
6200.00	1.20	287.40	6198.74	5.57	-68.01	5.57	68.24	274.68	0.52
6300.00	1.03	319.15	6298.72	6.57	-69.60	6.57	69.90	275.39	0.63
6400.00	1.04	307.28	6398.70	7.80	-70.91	7.80	71.33	276.27	0.21
6500.00	1.40	298.96	6498.68	8.94	-72.69	8.94	73.24	277.01	0.40
6600.00	1.44	298.17	6598.65	10.12	-74.87	10.12	75.55	277.70	0.05
6700.00	2.08	313.45	6698.60	11.96	-77.29	11.96	78.21	278.80	0.78
6800.00	2.00	300.74	6798.54	14.10	-80.11	14.10	81.34	279.98	0.46
6900.00	2.18	291.38	6898.47	15.68	-83.37	15.68	84.84	280.65	0.39
7000.00	1.73	297.34	6998.42	17.07	-86.49	17.07	88.16	281.16	0.49
<div> <div>HORIZONTAL DISPLACEMENT IS</div> <div>88.16 FEET AT 281.16 DEGREES</div> </div>									