

VES

VAUGHN ENERGY SERVICES

Company: Noble Energy

Lease/Well: Sarchet H / 24-22

Location: S-24 T-3N R-65W

Rig Name: Production

State/County: Colorado / Weld County

Latitude: 40.21, Longitude: -104.61

GRID North is 0.58 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: 4/21/2011 / 12:24

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	0.63	3.64	100.00	0.55	0.04	0.55	0.55	3.64	0.63
200.00	0.39	29.99	199.99	1.40	0.24	1.40	1.42	9.76	0.33
300.00	0.36	23.38	299.99	1.99	0.54	1.99	2.06	15.14	0.05
400.00	0.30	35.74	399.99	2.49	0.82	2.49	2.62	18.14	0.10
500.00	0.29	136.15	499.99	2.52	1.14	2.52	2.76	24.42	0.45
600.00	0.45	190.11	599.99	1.95	1.25	1.95	2.31	32.69	0.37
700.00	0.82	189.00	699.98	0.85	1.07	0.85	1.37	51.37	0.36
800.00	0.85	187.80	799.97	-0.59	0.86	-0.59	1.04	124.43	0.04
900.00	0.57	189.05	899.96	-1.81	0.68	-1.81	1.93	159.51	0.28
1000.00	0.61	192.18	999.96	-2.82	0.49	-2.82	2.86	170.21	0.05
1100.00	0.75	202.48	1099.95	-3.94	0.12	-3.94	3.95	178.19	0.19
1200.00	0.56	198.20	1199.94	-5.01	-0.28	-5.01	5.02	183.17	0.20
1300.00	0.43	193.53	1299.94	-5.84	-0.52	-5.84	5.86	185.06	0.13
1400.00	0.35	206.36	1399.94	-6.47	-0.74	-6.47	6.51	186.51	0.12
1500.00	0.32	211.32	1499.94	-6.98	-1.02	-6.98	7.06	188.31	0.04
1600.00	0.27	241.61	1599.94	-7.34	-1.37	-7.34	7.46	190.60	0.16
1700.00	0.31	313.87	1699.93	-7.26	-1.77	-7.26	7.48	193.71	0.34
1800.00	0.21	297.00	1799.93	-6.99	-2.13	-6.99	7.31	196.94	0.12
1900.00	0.55	312.43	1899.93	-6.58	-2.65	-6.58	7.10	201.94	0.35
2000.00	0.75	344.62	1999.92	-5.63	-3.18	-5.63	6.47	209.47	0.41
2100.00	0.91	23.79	2099.91	-4.28	-3.03	-4.28	5.24	215.35	0.58
2200.00	1.15	17.40	2199.90	-2.59	-2.41	-2.59	3.54	222.94	0.27
2300.00	1.21	14.34	2299.88	-0.62	-1.85	-0.62	1.95	251.55	0.08
2400.00	0.91	7.90	2399.86	1.19	-1.48	1.19	1.90	308.66	0.32
2500.00	0.20	259.47	2499.86	1.94	-1.54	1.94	2.48	321.50	0.99
2600.00	1.07	249.05	2599.85	1.58	-2.59	1.58	3.03	301.31	0.88
2700.00	1.12	250.79	2699.83	0.92	-4.39	0.92	4.48	281.83	0.06
2800.00	0.98	267.69	2799.81	0.56	-6.17	0.56	6.19	275.22	0.34
2900.00	1.03	255.12	2899.80	0.30	-7.89	0.30	7.90	272.15	0.23
3000.00	0.53	312.06	2999.79	0.38	-9.11	0.38	9.12	272.36	0.87
3100.00	1.20	350.85	3099.78	1.72	-9.62	1.72	9.77	280.14	0.85
3200.00	1.76	5.67	3199.75	4.28	-9.64	4.28	10.55	293.97	0.68
3300.00	2.13	5.09	3299.69	7.66	-9.32	7.66	12.07	309.44	0.37
3400.00	2.49	11.05	3399.61	11.64	-8.74	11.64	14.56	323.11	0.43

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	2.53	4.61	3499.51	15.97	-8.15	15.97	17.93	332.97	0.28
3600.00	2.04	2.34	3599.43	19.94	-7.90	19.94	21.45	338.40	0.50
3700.00	2.18	17.22	3699.36	23.54	-7.26	23.54	24.63	342.86	0.57
3800.00	2.60	10.05	3799.28	27.59	-6.30	27.59	28.30	347.14	0.51
3900.00	2.60	15.39	3899.17	32.01	-5.30	32.01	32.45	350.60	0.24
4000.00	2.54	16.40	3999.07	36.33	-4.07	36.33	36.55	353.60	0.07
4100.00	1.97	4.03	4099.00	40.17	-3.33	40.17	40.31	355.27	0.75
4200.00	2.05	11.77	4198.94	43.64	-2.84	43.64	43.73	356.28	0.28
4300.00	2.23	30.85	4298.87	47.06	-1.47	47.06	47.09	358.21	0.73
4400.00	2.53	30.86	4398.78	50.63	0.66	50.63	50.63	0.74	0.29
4500.00	2.46	25.00	4498.69	54.47	2.69	54.47	54.53	2.83	0.26
4600.00	2.70	40.18	4598.59	58.21	5.12	58.21	58.44	5.03	0.72
4700.00	3.09	53.65	4698.46	61.61	8.81	61.61	62.24	8.14	0.78
4800.00	3.55	43.92	4798.29	65.44	13.13	65.44	66.74	11.35	0.73
4900.00	2.86	30.50	4898.14	69.82	16.54	69.82	71.75	13.33	1.02
5000.00	2.79	21.67	4998.02	74.22	18.71	74.22	76.54	14.15	0.44
5100.00	2.27	19.35	5097.92	78.35	20.26	78.35	80.93	14.50	0.52
5200.00	2.44	9.02	5197.83	82.33	21.25	82.33	85.03	14.48	0.46
5300.00	2.21	2.27	5297.75	86.36	21.66	86.36	89.04	14.08	0.36
5400.00	1.81	358.54	5397.69	89.86	21.70	89.86	92.45	13.58	0.43
5500.00	2.07	355.90	5497.63	93.24	21.53	93.24	95.69	13.00	0.28
5600.00	1.40	349.85	5597.59	96.24	21.19	96.24	98.55	12.41	0.70
5700.00	1.40	356.62	5697.56	98.67	20.90	98.67	100.85	11.96	0.17
5800.00	1.37	326.22	5797.53	100.88	20.16	100.88	102.88	11.30	0.73
5900.00	1.49	3.44	5897.50	103.18	19.57	103.18	105.02	10.74	0.92
6000.00	1.86	359.78	5997.46	106.10	19.65	106.10	107.90	10.49	0.38
6100.00	2.14	337.78	6097.40	109.45	18.93	109.45	111.08	9.81	0.81
6200.00	2.47	348.11	6197.32	113.29	17.78	113.29	114.68	8.92	0.53
6300.00	2.79	351.34	6297.21	117.81	16.97	117.81	119.02	8.20	0.35
6400.00	2.78	337.04	6397.09	122.44	15.66	122.44	123.44	7.29	0.69
6500.00	3.22	334.84	6496.96	127.22	13.52	127.22	127.94	6.07	0.46
6600.00	3.35	342.81	6596.79	132.56	11.46	132.56	133.06	4.94	0.47
6700.00	3.29	355.59	6696.63	138.21	10.37	138.21	138.60	4.29	0.74
6800.00	3.63	352.33	6796.44	144.21	9.73	144.21	144.54	3.86	0.39
6900.00	4.45	354.56	6896.19	151.21	8.94	151.21	151.47	3.38	0.84
7000.00	4.90	0.96	6995.86	159.33	8.64	159.33	159.57	3.11	0.69
<div> <div>HORIZONTAL DISPLACEMENT IS</div> <div>159.57 FEET AT 3.11 DEGREES</div> </div>									