

VES

VAUGHN ENERGY SERVICES

Company: Noble Energy

Lease/Well: Aloysius / C34-11

Location: S-34 T-4N R-64W

Rig Name: Production

State/County: Colorado / Weld County

Latitude: 40.27, Longitude: -104.54

GRID North is 0.62 Degrees East of True North

VS-Azi: 0.00 Degrees

GTI

GYRO TECHNOLOGIES, INC

FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : Ground Level

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: inrun_ed.ut

Minimum Curvature Method

Report Date/Time: 12/12/2010 / 15:16

Vaughn Energy Services

Fort Worth, Texas

817-741-3610

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	0.39	160.70	100.00	-0.32	0.11	-0.32	0.34	160.70	0.39
200.00	0.26	114.85	200.00	-0.74	0.43	-0.74	0.86	149.75	0.28
300.00	0.31	99.70	300.00	-0.89	0.91	-0.89	1.27	134.19	0.09
400.00	0.08	51.55	400.00	-0.89	1.24	-0.89	1.52	125.68	0.27
500.00	0.26	48.57	500.00	-0.70	1.46	-0.70	1.62	115.43	0.18
600.00	0.16	56.95	599.99	-0.47	1.75	-0.47	1.81	105.03	0.10
700.00	0.24	43.25	699.99	-0.24	2.01	-0.24	2.02	96.85	0.09
800.00	0.13	24.11	799.99	0.01	2.20	0.01	2.20	89.61	0.12
900.00	0.06	359.61	899.99	0.17	2.24	0.17	2.25	85.59	0.08
1000.00	0.15	2.57	999.99	0.36	2.25	0.36	2.28	80.86	0.09
1100.00	0.12	353.09	1099.99	0.60	2.24	0.60	2.32	74.95	0.04
1200.00	0.24	329.04	1199.99	0.89	2.12	0.89	2.30	67.20	0.14
1300.00	0.31	290.26	1299.99	1.17	1.76	1.17	2.11	56.43	0.19
1400.00	0.35	229.04	1399.99	1.06	1.28	1.06	1.66	50.27	0.34
1500.00	0.27	234.96	1499.99	0.73	0.86	0.73	1.12	49.63	0.08
1600.00	0.32	299.18	1599.99	0.73	0.42	0.73	0.84	30.22	0.31
1700.00	0.28	307.18	1699.99	1.01	-0.01	1.01	1.01	359.39	0.06
1800.00	0.28	349.46	1799.99	1.40	-0.25	1.40	1.42	349.86	0.20
1900.00	0.44	9.40	1899.98	2.02	-0.23	2.02	2.03	353.41	0.20
2000.00	0.49	338.20	1999.98	2.80	-0.33	2.80	2.82	353.26	0.25
2100.00	0.41	18.95	2099.98	3.53	-0.37	3.53	3.55	353.95	0.32
2200.00	0.53	359.57	2199.97	4.32	-0.26	4.32	4.33	356.53	0.20
2300.00	0.63	2.89	2299.97	5.33	-0.24	5.33	5.34	357.45	0.11
2400.00	0.56	13.09	2399.96	6.36	-0.10	6.36	6.36	359.11	0.13
2500.00	0.59	356.54	2499.96	7.35	-0.02	7.35	7.35	359.86	0.17
2600.00	0.59	4.06	2599.95	8.38	-0.01	8.38	8.38	359.91	0.08
2700.00	0.62	354.80	2699.95	9.43	-0.03	9.43	9.43	359.84	0.10
2800.00	0.57	349.73	2799.94	10.46	-0.16	10.46	10.46	359.10	0.07
2900.00	0.64	354.92	2899.94	11.51	-0.30	11.51	11.52	358.50	0.09
3000.00	0.31	343.68	2999.93	12.33	-0.43	12.33	12.34	358.01	0.34
3100.00	0.34	138.90	3099.93	12.37	-0.31	12.37	12.37	358.57	0.64
3200.00	0.60	122.35	3199.93	11.86	0.33	11.86	11.87	1.59	0.29
3300.00	1.14	151.02	3299.92	10.72	1.25	10.72	10.79	6.66	0.68
3400.00	1.76	175.58	3399.89	8.32	1.85	8.32	8.52	12.55	0.87

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	1.98	180.98	3499.83	5.06	1.94	5.06	5.42	20.98	0.28
3600.00	2.12	193.89	3599.77	1.53	1.47	1.53	2.12	43.73	0.48
3700.00	2.19	189.63	3699.70	-2.15	0.70	-2.15	2.26	161.91	0.18
3800.00	2.59	195.10	3799.61	-6.21	-0.21	-6.21	6.22	181.90	0.46
3900.00	2.74	196.36	3899.50	-10.69	-1.47	-10.69	10.79	187.82	0.17
4000.00	2.80	204.07	3999.39	-15.21	-3.14	-15.21	15.53	191.65	0.38
4100.00	3.06	203.13	4099.26	-19.90	-5.18	-19.90	20.56	194.60	0.26
4200.00	2.86	195.75	4199.12	-24.75	-6.91	-24.75	25.70	195.59	0.43
4300.00	1.97	189.49	4299.03	-28.85	-7.87	-28.85	29.90	195.25	0.93
4400.00	2.07	175.95	4398.97	-32.35	-8.02	-32.35	33.33	193.93	0.49
4500.00	2.08	175.43	4498.91	-35.96	-7.75	-35.96	36.79	192.16	0.02
4600.00	2.24	177.56	4598.83	-39.72	-7.52	-39.72	40.43	190.72	0.17
4700.00	2.04	163.46	4698.77	-43.38	-6.93	-43.38	43.93	189.08	0.56
4800.00	2.50	156.18	4798.69	-47.09	-5.54	-47.09	47.41	186.71	0.54
4900.00	2.09	156.14	4898.61	-50.75	-3.92	-50.75	50.90	184.42	0.41
5000.00	1.94	154.12	4998.54	-53.94	-2.45	-53.94	54.00	182.60	0.17
5100.00	2.04	145.44	5098.48	-56.93	-0.70	-56.93	56.93	180.70	0.32
5200.00	1.58	146.88	5198.43	-59.55	1.06	-59.55	59.56	178.98	0.46
5300.00	2.07	143.39	5298.38	-62.15	2.89	-62.15	62.22	177.34	0.51
5400.00	1.71	163.19	5398.33	-65.03	4.40	-65.03	65.18	176.13	0.74
5500.00	1.79	156.37	5498.28	-67.89	5.46	-67.89	68.11	175.40	0.22
5600.00	1.75	147.42	5598.24	-70.60	6.91	-70.60	70.94	174.41	0.28
5700.00	1.91	146.73	5698.18	-73.29	8.64	-73.29	73.79	173.27	0.16
5800.00	1.98	160.24	5798.13	-76.30	10.14	-76.30	76.97	172.43	0.46
5900.00	2.69	177.01	5898.05	-80.27	10.85	-80.27	81.00	172.31	0.98
6000.00	3.43	185.25	5997.90	-85.59	10.69	-85.59	86.26	172.88	0.86
6100.00	3.86	199.19	6097.70	-91.75	9.31	-91.75	92.22	174.20	0.98
6200.00	2.91	202.54	6197.53	-97.28	7.23	-97.28	97.54	175.75	0.97
6300.00	1.98	210.08	6297.43	-101.12	5.39	-101.12	101.26	176.95	0.99
6400.00	1.52	236.15	6397.39	-103.35	3.43	-103.35	103.41	178.10	0.91
6500.00	1.38	213.74	6497.36	-105.09	1.66	-105.09	105.10	179.10	0.58
6600.00	1.28	222.56	6597.33	-106.91	0.24	-106.91	106.91	179.87	0.23
6700.00	1.29	202.18	6697.31	-108.78	-0.94	-108.78	108.78	180.50	0.45
6800.00	1.19	197.88	6797.28	-110.80	-1.69	-110.80	110.82	180.87	0.14
6900.00	1.28	181.43	6897.26	-112.90	-2.03	-112.90	112.92	181.03	0.36

<div> HORIZONTAL DISPLACEMENT IS 112.92 FEET AT 181.03 DEGREES </div>
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