

VES

VAUGHN ENERGY SERVICES

Company: Noble Energy
 Lease/Well: Wells Ranch USX AA / 25-1
 Location: S-25 T-6N R-63W
 Rig Name: Production
 State/County: Colorado / Weld County
 Latitude: 40.46, Longitude: -104.38
 GRID North is 0.72 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: 4/22/2011 / 20:23

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	0.87	235.35	100.00	-0.43	-0.62	-0.43	0.76	235.35	0.87
200.00	0.63	234.92	199.99	-1.18	-1.70	-1.18	2.07	235.23	0.24
300.00	0.67	179.79	299.98	-2.08	-2.14	-2.08	2.99	225.85	0.60
400.00	1.26	165.55	399.97	-3.73	-1.87	-3.73	4.17	206.60	0.63
500.00	2.19	170.95	499.92	-6.68	-1.29	-6.68	6.81	190.96	0.95
600.00	2.72	172.55	599.83	-10.92	-0.69	-10.92	10.94	183.60	0.53
700.00	2.65	176.12	699.72	-15.57	-0.22	-15.57	15.58	180.82	0.18
800.00	2.58	192.23	799.62	-20.08	-0.54	-20.08	20.09	181.55	0.73
900.00	2.55	201.75	899.52	-24.35	-1.85	-24.35	24.42	184.34	0.43
1000.00	2.51	181.29	999.42	-28.60	-2.72	-28.60	28.73	185.43	0.90
1100.00	2.43	174.84	1099.33	-32.90	-2.58	-32.90	33.00	184.48	0.29
1200.00	2.41	182.63	1199.24	-37.11	-2.48	-37.11	37.20	183.83	0.33
1300.00	2.45	181.81	1299.15	-41.35	-2.65	-41.35	41.44	183.66	0.05
1400.00	2.37	171.94	1399.06	-45.54	-2.43	-45.54	45.60	183.05	0.42
1500.00	2.38	174.42	1498.98	-49.65	-1.93	-49.65	49.69	182.23	0.10
1600.00	2.21	175.53	1598.90	-53.64	-1.58	-53.64	53.66	181.69	0.17
1700.00	1.65	176.84	1698.84	-57.00	-1.35	-57.00	57.01	181.36	0.57
1800.00	1.08	185.48	1798.81	-59.37	-1.36	-59.37	59.39	181.32	0.60
1900.00	0.66	191.05	1898.80	-60.88	-1.56	-60.88	60.90	181.47	0.43
2000.00	0.27	197.54	1998.79	-61.67	-1.75	-61.67	61.69	181.62	0.39
2100.00	0.12	293.77	2098.79	-61.85	-1.92	-61.85	61.88	181.77	0.31
2200.00	0.71	279.83	2198.79	-61.70	-2.63	-61.70	61.76	182.44	0.59
2300.00	1.43	299.51	2298.77	-60.98	-4.33	-60.98	61.13	184.06	0.80
2400.00	1.63	301.57	2398.74	-59.62	-6.63	-59.62	59.99	186.34	0.21
2500.00	1.39	300.08	2498.70	-58.26	-8.89	-58.26	58.94	188.68	0.25
2600.00	1.29	300.79	2598.68	-57.08	-10.91	-57.08	58.11	190.82	0.10
2700.00	1.23	312.61	2698.65	-55.78	-12.66	-55.78	57.20	192.79	0.27
2800.00	1.22	303.41	2798.63	-54.47	-14.34	-54.47	56.32	194.75	0.20
2900.00	1.41	324.49	2898.60	-52.88	-15.94	-52.88	55.23	196.77	0.52
3000.00	1.35	327.33	2998.57	-50.89	-17.29	-50.89	53.75	198.76	0.10
3100.00	1.32	318.73	3098.55	-49.03	-18.68	-49.03	52.47	200.86	0.20
3200.00	1.76	330.22	3198.51	-46.84	-20.21	-46.84	51.01	203.34	0.53
3300.00	1.28	326.72	3298.48	-44.57	-21.58	-44.57	49.52	205.84	0.48
3400.00	1.56	328.69	3398.44	-42.47	-22.90	-42.47	48.25	208.33	0.28

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	1.95	312.69	3498.40	-40.15	-24.86	-40.15	47.23	211.76	0.63
3600.00	1.90	328.91	3598.34	-37.58	-26.97	-37.58	46.26	215.66	0.55
3700.00	1.94	333.65	3698.29	-34.65	-28.58	-34.65	44.91	219.51	0.16
3800.00	1.72	328.65	3798.24	-31.85	-30.11	-31.85	43.83	223.39	0.28
3900.00	1.71	316.94	3898.19	-29.48	-31.90	-29.48	43.44	227.26	0.35
4000.00	1.88	286.20	3998.14	-27.94	-34.49	-27.94	44.39	230.99	0.96
4100.00	2.35	291.18	4098.08	-26.74	-37.98	-26.74	46.45	234.85	0.50
4200.00	2.95	290.26	4197.97	-25.11	-42.30	-25.11	49.19	239.30	0.60
4300.00	2.97	286.48	4297.84	-23.49	-47.19	-23.49	52.71	243.54	0.20
4400.00	3.31	279.16	4397.69	-22.29	-52.53	-22.29	57.06	247.00	0.52
4500.00	3.76	285.07	4497.50	-20.98	-58.54	-20.98	62.19	250.29	0.58
4600.00	3.15	278.11	4597.31	-19.74	-64.44	-19.74	67.39	252.97	0.74
4700.00	2.45	276.03	4697.19	-19.12	-69.28	-19.12	71.88	254.57	0.71
4800.00	2.41	280.07	4797.10	-18.53	-73.48	-18.53	75.78	255.84	0.17
4900.00	2.03	281.00	4897.03	-17.83	-77.29	-17.83	79.32	257.01	0.38
5000.00	1.27	260.56	4996.99	-17.67	-80.12	-17.67	82.05	257.56	0.95
5100.00	0.66	251.96	5096.97	-18.03	-81.76	-18.03	83.73	257.57	0.62
5200.00	0.46	265.65	5196.97	-18.24	-82.71	-18.24	84.69	257.57	0.24
5300.00	0.85	348.21	5296.96	-17.54	-83.26	-17.54	85.09	258.10	0.91
5400.00	1.34	349.54	5396.94	-15.66	-83.62	-15.66	85.08	259.39	0.49
5500.00	0.92	318.27	5496.93	-13.90	-84.37	-13.90	85.51	260.64	0.73
5600.00	0.70	299.59	5596.92	-13.00	-85.44	-13.00	86.42	261.35	0.34
5700.00	0.71	255.07	5696.91	-12.86	-86.57	-12.86	87.52	261.55	0.54
5800.00	0.69	254.67	5796.90	-13.18	-87.75	-13.18	88.74	261.46	0.03
5900.00	0.85	253.05	5896.89	-13.55	-89.04	-13.55	90.06	261.34	0.16
6000.00	0.89	257.57	5996.88	-13.94	-90.50	-13.94	91.57	261.25	0.08
6100.00	0.75	246.97	6096.87	-14.36	-91.86	-14.36	92.97	261.12	0.21
6200.00	0.58	231.35	6196.86	-14.93	-92.85	-14.93	94.04	260.87	0.25
6300.00	0.54	232.67	6296.86	-15.53	-93.62	-15.53	94.90	260.58	0.04
6400.00	0.12	273.62	6396.86	-15.81	-94.10	-15.81	95.42	260.46	0.46
6500.00	0.25	242.20	6496.86	-15.90	-94.41	-15.90	95.74	260.44	0.16
6600.00	0.26	122.88	6596.86	-16.13	-94.41	-16.13	95.78	260.30	0.45
HORIZONTAL DISPLACEMENT IS 95.78 FEET AT 260.30 DEGREES									