

VES

VAUGHN ENERGY SERVICES

Company: Noble Energy

Lease/Well: Hoffner / 43-35

Location: S-43 T-6N R-65W

Rig Name: Production

State/County: Colorado / Weld County

Latitude: 40.44, Longitude: -104.51

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: 3/3/2011 / 08:36

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	0.27	111.25	100.00	-0.08	0.22	-0.08	0.23	111.25	0.27
200.00	0.32	160.36	200.00	-0.43	0.52	-0.43	0.68	129.29	0.25
300.00	0.09	189.16	300.00	-0.77	0.60	-0.77	0.98	141.92	0.24
400.00	0.14	314.83	400.00	-0.76	0.50	-0.76	0.92	146.68	0.21
500.00	0.26	218.60	500.00	-0.85	0.28	-0.85	0.89	162.08	0.31
600.00	0.33	103.25	600.00	-1.09	0.41	-1.09	1.17	159.19	0.49
700.00	0.44	191.88	700.00	-1.53	0.61	-1.53	1.65	158.17	0.54
800.00	0.43	184.82	799.99	-2.28	0.50	-2.28	2.33	167.55	0.06
900.00	0.32	100.91	899.99	-2.70	0.75	-2.70	2.81	164.52	0.51
1000.00	0.38	271.45	999.99	-2.75	0.70	-2.75	2.84	165.81	0.70
1100.00	0.08	296.16	1099.99	-2.71	0.31	-2.71	2.73	173.57	0.31
1200.00	0.14	213.08	1199.99	-2.78	0.18	-2.78	2.79	176.27	0.15
1300.00	0.10	160.69	1299.99	-2.97	0.15	-2.97	2.97	177.19	0.11
1400.00	0.11	202.36	1399.99	-3.15	0.14	-3.15	3.15	177.48	0.08
1500.00	0.10	241.85	1499.99	-3.28	0.03	-3.28	3.28	179.56	0.07
1600.00	0.24	247.73	1599.99	-3.40	-0.25	-3.40	3.41	184.16	0.15
1700.00	0.33	244.23	1699.99	-3.61	-0.70	-3.61	3.67	191.01	0.08
1800.00	0.72	272.06	1799.98	-3.71	-1.59	-3.71	4.03	203.22	0.46
1900.00	0.84	266.26	1899.97	-3.73	-2.96	-3.73	4.76	218.40	0.14
2000.00	1.01	259.64	1999.96	-3.94	-4.56	-3.94	6.03	229.20	0.20
2100.00	1.12	261.40	2099.94	-4.25	-6.40	-4.25	7.68	236.45	0.11
2200.00	0.60	240.30	2199.93	-4.65	-7.82	-4.65	9.10	239.27	0.60
2300.00	1.04	212.22	2299.92	-5.68	-8.76	-5.68	10.44	237.05	0.58
2400.00	0.69	223.79	2399.91	-6.88	-9.66	-6.88	11.86	234.55	0.39
2500.00	1.15	219.44	2499.90	-8.09	-10.72	-8.09	13.43	232.95	0.47
2600.00	0.97	225.73	2599.88	-9.46	-11.96	-9.46	15.25	231.66	0.22
2700.00	0.72	211.83	2699.87	-10.58	-12.90	-10.58	16.69	230.63	0.33
2800.00	0.67	272.61	2799.86	-11.09	-13.81	-11.09	17.71	231.24	0.70
2900.00	0.21	323.40	2899.86	-10.91	-14.50	-10.91	18.15	233.03	0.56
3000.00	0.12	39.80	2999.86	-10.69	-14.55	-10.69	18.05	233.68	0.21
3100.00	0.06	47.32	3099.86	-10.58	-14.44	-10.58	17.90	233.78	0.05
3200.00	0.31	55.73	3199.86	-10.38	-14.17	-10.38	17.57	233.77	0.25
3300.00	0.74	58.81	3299.85	-9.90	-13.40	-9.90	16.65	233.54	0.43
3400.00	1.27	59.50	3399.84	-9.00	-11.88	-9.00	14.90	232.87	0.53

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	1.13	54.01	3499.82	-7.85	-10.13	-7.85	12.82	232.21	0.19
3600.00	0.93	45.90	3599.80	-6.71	-8.75	-6.71	11.03	232.51	0.25
3700.00	1.03	53.83	3699.79	-5.62	-7.44	-5.62	9.33	232.96	0.17
3800.00	0.87	54.69	3799.77	-4.65	-6.10	-4.65	7.67	232.69	0.16
3900.00	0.72	47.82	3899.76	-3.79	-5.02	-3.79	6.29	232.94	0.17
4000.00	0.63	64.35	3999.76	-3.13	-4.06	-3.13	5.13	232.35	0.21
4100.00	0.46	118.77	4099.75	-3.09	-3.21	-3.09	4.46	226.14	0.52
4200.00	0.60	204.13	4199.75	-3.76	-3.08	-3.76	4.86	219.27	0.73
4300.00	1.07	224.32	4299.74	-4.91	-3.94	-4.91	6.30	218.76	0.54
4400.00	1.47	238.30	4399.71	-6.25	-5.69	-6.25	8.45	222.29	0.50
4500.00	1.70	233.61	4499.67	-7.81	-7.97	-7.81	11.16	225.60	0.27
4600.00	1.60	233.33	4599.63	-9.52	-10.29	-9.52	14.02	227.21	0.11
4700.00	1.46	241.36	4699.60	-10.97	-12.52	-10.97	16.65	228.80	0.25
4800.00	2.16	240.95	4799.55	-12.49	-15.29	-12.49	19.75	230.75	0.70
4900.00	1.88	225.01	4899.49	-14.57	-18.10	-14.57	23.24	231.17	0.63
5000.00	1.91	217.83	4999.43	-17.05	-20.29	-17.05	26.50	229.96	0.24
5100.00	1.10	202.59	5099.40	-19.25	-21.68	-19.25	28.99	228.39	0.90
5200.00	0.85	232.80	5199.38	-20.59	-22.64	-20.59	30.60	227.71	0.56
5300.00	0.88	243.46	5299.37	-21.39	-23.92	-21.39	32.09	228.20	0.16
5400.00	0.58	216.13	5399.36	-22.14	-24.91	-22.14	33.33	228.37	0.45
5500.00	0.24	188.04	5499.36	-22.76	-25.24	-22.76	33.99	227.96	0.38
5600.00	0.32	109.48	5599.36	-23.07	-25.01	-23.07	34.02	227.31	0.36
5700.00	0.30	68.11	5699.36	-23.06	-24.50	-23.06	33.65	226.73	0.22
5800.00	0.43	37.82	5799.36	-22.67	-24.03	-22.67	33.03	226.66	0.23
5900.00	0.65	29.53	5899.35	-21.88	-23.52	-21.88	32.12	227.06	0.23
6000.00	0.98	8.08	5999.34	-20.54	-23.12	-20.54	30.93	228.38	0.45
6100.00	1.45	34.03	6099.32	-18.65	-22.29	-18.65	29.06	230.09	0.71
6200.00	2.12	16.84	6199.27	-15.83	-21.05	-15.83	26.34	233.05	0.85
6300.00	2.56	355.53	6299.19	-11.84	-20.69	-11.84	23.83	240.22	0.97
6400.00	1.80	5.55	6399.12	-8.05	-20.71	-8.05	22.22	248.77	0.85
6500.00	1.10	357.64	6499.08	-5.53	-20.60	-5.53	21.33	254.98	0.73

HORIZONTAL DISPLACEMENT IS
21.33 FEET AT 254.98 DEGREES