

VES

VAUGHN ENERGY SERVICES

Company: NOBLE ENERGY
Lease/Well: 70 RANCH USX BB/ # 9-11

Location:

Rig Name: PRODUCTION

State/County: COLORADO/WELD COUNTY

Latitude: 40.40

GRID North is 0.69 Degrees East of True North

VS-Azi: 0.00 Degrees

GTI

GYRO TECHNOLOGIES INC

FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : GL

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: run1ed.ut

Minimum Curvature Method

Report Date/Time: 5/18/2011 / 20:39

Vaughn Energy Services

Rifle, Colorado

303-489-9231

Jay Hinman

70 Ranch USX BB 9-11/05-123-28074

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	0.17	105.13	100.00	-0.04	0.14	-0.04	0.15	105.13	0.17
200.00	0.20	127.14	200.00	-0.18	0.42	-0.18	0.46	113.27	0.08
300.00	0.31	157.09	300.00	-0.54	0.67	-0.54	0.86	128.78	0.17
400.00	0.27	166.98	400.00	-1.02	0.83	-1.02	1.31	140.87	0.06
500.00	0.30	185.47	500.00	-1.51	0.86	-1.51	1.73	150.39	0.10
600.00	0.48	213.52	599.99	-2.11	0.60	-2.11	2.20	164.12	0.26
700.00	0.06	229.52	699.99	-2.49	0.33	-2.49	2.52	172.44	0.42
800.00	0.55	232.94	799.99	-2.82	-0.09	-2.82	2.82	181.82	0.49
900.00	0.60	222.15	899.99	-3.49	-0.82	-3.49	3.58	193.21	0.12
1000.00	0.50	218.28	999.98	-4.21	-1.44	-4.21	4.45	198.82	0.11
1100.00	0.58	226.47	1099.98	-4.90	-2.07	-4.90	5.32	202.90	0.11
1200.00	0.45	231.22	1199.97	-5.49	-2.74	-5.49	6.14	206.52	0.14
1300.00	0.38	217.69	1299.97	-6.00	-3.25	-6.00	6.83	208.44	0.12
1400.00	0.56	217.16	1399.97	-6.66	-3.75	-6.66	7.64	209.40	0.18
1500.00	0.41	200.45	1499.96	-7.38	-4.17	-7.38	8.48	209.46	0.20
1600.00	0.57	203.30	1599.96	-8.17	-4.49	-8.17	9.33	208.79	0.16
1700.00	0.54	203.06	1699.95	-9.07	-4.87	-9.07	10.29	208.26	0.02
1800.00	0.66	194.03	1799.95	-10.06	-5.20	-10.06	11.33	207.33	0.15
1900.00	0.53	183.64	1899.94	-11.08	-5.37	-11.08	12.32	205.85	0.17
2000.00	0.23	161.13	1999.94	-11.73	-5.33	-11.73	12.89	204.45	0.33
2100.00	0.26	122.42	2099.94	-12.04	-5.08	-12.04	13.07	202.88	0.16
2200.00	0.42	93.28	2199.94	-12.18	-4.53	-12.18	13.00	200.38	0.23
2300.00	0.28	79.20	2299.94	-12.16	-3.92	-12.16	12.77	197.86	0.16
2400.00	0.37	61.67	2399.94	-11.96	-3.39	-11.96	12.43	195.84	0.13
2500.00	0.74	53.06	2499.93	-11.42	-2.59	-11.42	11.71	192.80	0.38
2600.00	0.99	57.55	2599.92	-10.57	-1.35	-10.57	10.65	187.26	0.26
2700.00	0.95	68.75	2699.90	-9.80	0.16	-9.80	9.80	179.08	0.19
2800.00	1.00	76.97	2799.89	-9.30	1.78	-9.30	9.47	169.14	0.15
2900.00	1.24	97.03	2899.87	-9.24	3.71	-9.24	9.96	158.11	0.46
3000.00	1.30	126.68	2999.85	-10.05	5.70	-10.05	11.55	150.44	0.65
3100.00	1.16	146.06	3099.83	-11.57	7.17	-11.57	13.61	148.19	0.44
3200.00	1.10	186.72	3199.81	-13.36	7.63	-13.36	15.38	150.28	0.79
3300.00	0.95	230.40	3299.79	-14.84	6.88	-14.84	16.35	155.14	0.77
3400.00	1.00	280.60	3399.78	-15.20	5.38	-15.20	16.13	160.50	0.83

<i>Measured Depth FT</i>	<i>Incl Angle Deg</i>	<i>Drift Direction Deg</i>	<i>TVD FT</i>	<i>+N/-S FT</i>	<i>+E/-W FT</i>	<i>Vertical Section FT</i>	<i>Closure Distance FT</i>	<i>Closure Direction Deg</i>	<i>Dogleg Severity Deg/100</i>
3500.00	1.71	306.79	3499.75	-14.15	3.33	-14.15	14.54	166.75	0.93
3600.00	2.63	309.92	3599.68	-11.79	0.38	-11.79	11.79	178.16	0.93
3700.00	2.66	308.89	3699.57	-8.86	-3.19	-8.86	9.41	199.79	0.06
3800.00	2.76	308.20	3799.46	-5.91	-6.89	-5.91	9.07	229.36	0.11
3900.00	2.50	305.24	3899.36	-3.16	-10.56	-3.16	11.02	253.33	0.30
4000.00	1.95	311.22	3999.28	-0.78	-13.62	-0.78	13.64	266.72	0.59
4100.00	1.41	322.41	4099.24	1.32	-15.66	1.32	15.71	274.82	0.63
4200.00	0.51	331.09	4199.22	2.69	-16.62	2.69	16.84	279.18	0.91
4300.00	0.12	344.49	4299.22	3.17	-16.87	3.17	17.16	280.66	0.40
4400.00	0.15	14.38	4399.22	3.40	-16.86	3.40	17.20	281.40	0.08
4500.00	0.40	118.00	4499.22	3.36	-16.52	3.36	16.86	281.50	0.46
4600.00	0.22	123.05	4599.22	3.09	-16.05	3.09	16.34	280.90	0.19
4700.00	0.35	136.85	4699.22	2.77	-15.68	2.77	15.92	280.00	0.15
4800.00	1.10	150.38	4799.21	1.71	-15.00	1.71	15.09	276.49	0.77
4900.00	0.85	166.76	4899.19	0.15	-14.35	0.15	14.35	270.60	0.38
5000.00	0.88	180.23	4999.18	-1.34	-14.19	-1.34	14.25	264.62	0.20
5100.00	0.58	224.84	5099.17	-2.46	-14.54	-2.46	14.75	260.41	0.62
5200.00	0.73	293.41	5199.17	-2.56	-15.48	-2.56	15.69	260.60	0.75
5300.00	1.00	302.45	5299.16	-1.84	-16.80	-1.84	16.90	263.75	0.30
5400.00	1.12	303.35	5399.14	-0.84	-18.36	-0.84	18.38	267.39	0.12
5500.00	1.20	318.54	5499.12	0.49	-19.87	0.49	19.87	271.40	0.32
5600.00	1.15	296.66	5599.10	1.72	-21.45	1.72	21.52	274.58	0.45
5700.00	1.16	292.87	5699.08	2.56	-23.28	2.56	23.43	276.28	0.08
5800.00	0.65	311.94	5799.07	3.34	-24.64	3.34	24.87	277.71	0.59
5900.00	0.48	329.06	5899.06	4.08	-25.28	4.08	25.61	279.16	0.24
6000.00	0.46	342.34	5999.06	4.82	-25.62	4.82	26.07	280.65	0.11
6100.00	0.33	10.42	6099.06	5.48	-25.69	5.48	26.26	282.05	0.23
6200.00	0.37	34.74	6199.05	6.03	-25.45	6.03	26.15	283.34	0.15
6300.00	0.76	47.67	6299.05	6.75	-24.77	6.75	25.67	285.24	0.41
6400.00	0.75	55.70	6399.04	7.57	-23.74	7.57	24.91	287.68	0.11
6500.00	0.65	74.34	6499.03	8.09	-22.65	8.09	24.05	289.66	0.25
6600.00	0.91	60.26	6599.02	8.64	-21.41	8.64	23.09	291.96	0.32
6700.00	0.77	54.11	6699.01	9.42	-20.18	9.42	22.28	295.02	0.16
6740.00	1.03	63.13	6739.01	9.74	-19.65	9.74	21.93	296.38	0.74

HORIZONTAL DISPLACEMENT IS
21.93 FEET AT 296.38 DEGREES