

**VES**

VAUGHN ENERGY SERVICES

Company: NOBLE ENERGY

Well: ALOYSIUS C34-23

Rig Name: PRODUCTION

State/County: COLORADO/WELD

Latitude: 40.27

GRID North is 0.63 Degrees East of True North

VS-Azi: 0.00 Degrees

**GTI**

GYRO TECHNOLOGIES, INC.

**FIELD COPY ONLY (NOT DEFINITIVE)**

Service Company : VAUGHN ENERGY SERVICES

**DRILLOG MS GYRO SURVEY CALCULATIONS**

Filename: msgyro\_run01-01\_ed.ut

Minimum Curvature Method

Report Date/Time: 12/9/2010 / 11:40

VAUGHN ENERGY SERVICES

RIFLE, COLORADO

800-606-4976

Surveyor: Nick Campbell

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	0.30	48.06	100.00	0.18	0.20	0.18	0.27	48.06	0.30
200.00	0.19	300.23	200.00	0.44	0.25	0.44	0.51	29.70	0.41
300.00	0.20	320.12	300.00	0.66	-0.01	0.66	0.66	359.52	0.07
400.00	0.30	274.29	400.00	0.81	-0.38	0.81	0.89	334.89	0.22
500.00	0.63	263.12	499.99	0.76	-1.19	0.76	1.41	302.69	0.34
600.00	0.75	266.01	599.99	0.65	-2.39	0.65	2.47	285.29	0.12
700.00	0.81	261.64	699.98	0.50	-3.73	0.50	3.77	277.70	0.09
800.00	0.96	267.37	799.97	0.36	-5.27	0.36	5.29	273.94	0.18
900.00	1.05	275.54	899.95	0.41	-7.02	0.41	7.04	273.37	0.17
1000.00	0.95	265.48	999.94	0.44	-8.76	0.44	8.77	272.85	0.20
1100.00	1.02	256.93	1099.92	0.17	-10.46	0.17	10.46	270.92	0.16
1200.00	1.53	258.22	1199.90	-0.31	-12.64	-0.31	12.64	268.61	0.50
1300.00	1.15	246.57	1299.87	-0.98	-14.86	-0.98	14.89	266.24	0.46
1400.00	1.41	237.54	1399.84	-2.04	-16.82	-2.04	16.94	263.10	0.33
1500.00	1.36	228.61	1499.81	-3.48	-18.75	-3.48	19.07	259.48	0.22
1600.00	1.23	228.46	1599.79	-4.98	-20.45	-4.98	21.05	256.30	0.13
1700.00	1.12	223.27	1699.77	-6.41	-21.93	-6.41	22.84	253.70	0.16
1800.00	1.07	226.71	1799.75	-7.76	-23.27	-7.76	24.53	251.56	0.08
1900.00	0.92	221.97	1899.73	-8.99	-24.48	-8.99	26.08	249.83	0.17
2000.00	0.94	239.10	1999.72	-10.01	-25.72	-10.01	27.60	248.74	0.28
2100.00	0.39	247.89	2099.71	-10.56	-26.74	-10.56	28.75	248.46	0.56
2200.00	0.70	297.23	2199.71	-10.41	-27.60	-10.41	29.50	249.34	0.53
2300.00	0.69	314.40	2299.70	-9.71	-28.57	-9.71	30.18	251.24	0.21
2400.00	0.67	335.50	2399.70	-8.75	-29.25	-8.75	30.53	253.34	0.25
2500.00	0.85	344.00	2499.69	-7.51	-29.69	-7.51	30.63	255.80	0.21
2600.00	0.85	346.99	2599.68	-6.08	-30.06	-6.08	30.67	258.57	0.04
2700.00	0.85	350.48	2699.66	-4.62	-30.35	-4.62	30.70	261.34	0.05
2800.00	0.86	350.65	2799.65	-3.15	-30.60	-3.15	30.76	264.12	0.01
2900.00	0.72	335.10	2899.64	-1.84	-30.99	-1.84	31.04	266.60	0.26

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
3000.00	0.57	348.68	2999.64	-0.78	-31.35	-0.78	31.36	268.57	0.22
3100.00	0.75	8.83	3099.63	0.35	-31.34	0.35	31.35	270.64	0.30
3200.00	0.77	68.69	3199.62	1.24	-30.62	1.24	30.65	272.32	0.76
3300.00	0.91	120.52	3299.61	1.08	-29.31	1.08	29.33	272.11	0.74
3400.00	1.13	161.03	3399.60	-0.25	-28.31	-0.25	28.31	269.49	0.73
3500.00	0.81	208.80	3499.59	-1.81	-28.33	-1.81	28.39	266.35	0.84
3600.00	0.67	222.56	3599.58	-2.86	-29.07	-2.86	29.21	264.38	0.23
3700.00	1.26	199.80	3699.56	-4.33	-29.84	-4.33	30.15	261.74	0.69
3800.00	1.30	211.93	3799.54	-6.33	-30.81	-6.33	31.46	258.39	0.27
3900.00	1.30	216.13	3899.51	-8.21	-32.08	-8.21	33.12	255.64	0.10
4000.00	1.55	228.66	3999.48	-10.02	-33.77	-10.02	35.23	253.47	0.40
4100.00	1.87	240.33	4099.44	-11.73	-36.21	-11.73	38.06	252.05	0.47
4200.00	2.11	228.04	4199.38	-13.77	-38.99	-13.77	41.35	250.56	0.48
4300.00	2.26	233.66	4299.31	-16.16	-41.95	-16.16	44.95	248.93	0.26
4400.00	2.16	240.18	4399.23	-18.26	-45.16	-18.26	48.71	247.98	0.27
4500.00	2.62	234.06	4499.15	-20.54	-48.65	-20.54	52.81	247.11	0.53
4600.00	2.89	224.56	4599.03	-23.68	-52.27	-23.68	57.39	245.63	0.53
4700.00	3.34	219.15	4698.88	-27.74	-55.88	-27.74	62.39	243.60	0.54
4800.00	2.55	219.41	4798.75	-31.72	-59.14	-31.72	67.11	241.79	0.79
4900.00	2.15	226.99	4898.66	-34.72	-61.92	-34.72	71.00	240.72	0.51
5000.00	1.89	230.48	4998.60	-37.06	-64.57	-37.06	74.45	240.15	0.29
5100.00	1.33	225.44	5098.56	-38.92	-66.67	-38.92	77.20	239.72	0.58
5200.00	1.69	228.77	5198.53	-40.71	-68.61	-40.71	79.78	239.32	0.37
5300.00	1.36	239.64	5298.49	-42.29	-70.75	-42.29	82.42	239.13	0.44
5400.00	0.85	262.06	5398.47	-42.99	-72.50	-42.99	84.29	239.34	0.66
5500.00	0.40	245.84	5498.47	-43.23	-73.55	-43.23	85.32	239.55	0.48
5600.00	0.99	201.01	5598.46	-44.18	-74.18	-44.18	86.34	239.22	0.76
5700.00	0.57	181.77	5698.45	-45.48	-74.50	-45.48	87.28	238.60	0.48
5800.00	0.32	241.09	5798.45	-46.11	-74.76	-46.11	87.84	238.34	0.49
5900.00	0.84	242.25	5898.44	-46.58	-75.65	-46.58	88.84	238.38	0.52
6000.00	0.67	182.23	5998.44	-47.51	-76.32	-47.51	89.90	238.10	0.77
6100.00	0.45	167.92	6098.43	-48.48	-76.26	-48.48	90.37	237.56	0.26
6200.00	0.24	177.18	6198.43	-49.07	-76.17	-49.07	90.61	237.21	0.22
6300.00	0.03	343.88	6298.43	-49.25	-76.17	-49.25	90.71	237.11	0.27
6400.00	0.05	263.92	6398.43	-49.23	-76.22	-49.23	90.74	237.14	0.06
6500.00	0.16	87.68	6498.43	-49.23	-76.13	-49.23	90.66	237.11	0.21
6600.00	0.17	42.75	6598.43	-49.11	-75.88	-49.11	90.39	237.09	0.13
6700.00	0.27	276.89	6698.43	-48.98	-76.01	-48.98	90.43	237.21	0.39
6800.00	0.35	182.54	6798.43	-49.25	-76.26	-49.25	90.78	237.14	0.45
6808.00	0.36	185.99	6806.43	-49.30	-76.26	-49.30	90.81	237.12	0.29

<div> HORIZONTAL DISPLACEMENT IS  90.81 FEET AT 237.12 DEGREES </div>
---