

VES

VAUGHN ENERGY SERVICES

Company: Noble Energy
 Lease/Well: State Schmidt / 36-35
 Location: S-36 T-5N R-65W
 Rig Name: Production
 State/County: Colorado / Weld County
 Latitude: 40.35, Longitude: -104.62
 GRID North is 0.57 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: inrun2_ed.ut

Minimum Curvature Method

Report Date/Time: 4/18/2011 / 18:46

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	0.21	221.31	100.00	-0.14	-0.12	-0.14	0.18	221.31	0.21
200.00	0.12	19.26	200.00	-0.18	-0.21	-0.18	0.27	229.46	0.32
300.00	0.47	43.78	300.00	0.21	0.11	0.21	0.24	27.08	0.36
400.00	0.44	30.33	400.00	0.84	0.58	0.84	1.02	34.88	0.11
500.00	0.50	305.71	499.99	1.42	0.42	1.42	1.48	16.35	0.64
600.00	0.59	324.31	599.99	2.10	-0.24	2.10	2.11	353.42	0.20
700.00	0.48	301.07	699.98	2.74	-0.90	2.74	2.88	341.70	0.24
800.00	0.62	319.76	799.98	3.37	-1.62	3.37	3.74	334.36	0.23
900.00	0.66	322.35	899.97	4.24	-2.32	4.24	4.83	331.31	0.05
1000.00	0.58	294.37	999.97	4.91	-3.13	4.91	5.82	327.44	0.31
1100.00	0.58	330.11	1099.96	5.56	-3.85	5.56	6.76	325.31	0.36
1200.00	0.90	338.73	1199.95	6.73	-4.38	6.73	8.03	326.91	0.33
1300.00	1.17	347.95	1299.94	8.46	-4.88	8.46	9.77	330.01	0.32
1400.00	1.51	351.81	1399.91	10.77	-5.29	10.77	12.00	333.86	0.35
1500.00	2.06	354.18	1499.86	13.87	-5.66	13.87	14.98	337.82	0.55
1600.00	2.35	346.57	1599.79	17.66	-6.31	17.66	18.75	340.32	0.41
1700.00	2.34	2.39	1699.70	21.69	-6.71	21.69	22.70	342.82	0.65
1800.00	1.90	343.36	1799.64	25.32	-7.09	25.32	26.29	344.35	0.82
1900.00	1.32	328.84	1899.60	27.89	-8.16	27.89	29.06	343.68	0.71
2000.00	1.42	320.67	1999.57	29.83	-9.54	29.83	31.32	342.26	0.22
2100.00	0.68	319.20	2099.55	31.24	-10.72	31.24	33.03	341.06	0.74
2200.00	1.01	310.97	2199.54	32.27	-11.77	32.27	34.35	339.95	0.35
2300.00	0.78	306.78	2299.53	33.25	-12.99	33.25	35.70	338.67	0.24
2400.00	1.01	304.03	2399.52	34.16	-14.26	34.16	37.02	337.33	0.23
2500.00	0.70	301.76	2499.50	34.97	-15.52	34.97	38.26	336.07	0.31
2600.00	0.89	294.90	2599.49	35.62	-16.74	35.62	39.36	334.83	0.21
2700.00	0.98	353.76	2699.48	36.80	-17.54	36.80	40.77	334.52	0.92
2800.00	1.60	2.38	2799.46	39.04	-17.57	39.04	42.81	335.77	0.64
2900.00	2.47	0.75	2899.39	42.59	-17.49	42.59	46.04	337.68	0.88
3000.00	3.38	2.07	2999.26	47.69	-17.35	47.69	50.75	340.01	0.91
3100.00	4.52	356.52	3099.02	54.57	-17.48	54.57	57.30	342.23	1.20
3200.00	5.64	359.05	3198.63	63.41	-17.81	63.41	65.86	344.32	1.15
3300.00	6.09	358.87	3298.11	73.63	-17.99	73.63	75.79	346.27	0.44
3400.00	5.72	356.67	3397.58	83.90	-18.39	83.90	85.89	347.64	0.43
3500.00	4.77	355.52	3497.16	93.02	-19.00	93.02	94.94	348.46	0.95
3600.00	4.39	355.79	3596.84	100.99	-19.61	100.99	102.87	349.01	0.38
3700.00	4.48	346.84	3696.54	108.61	-20.78	108.61	110.58	349.17	0.70

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
3800.00	5.30	1.54	3796.18	117.04	-21.54	117.04	119.00	349.57	1.49
3900.00	6.95	358.41	3895.60	127.70	-21.59	127.70	129.51	350.41	1.68
4000.00	8.90	0.37	3994.64	141.48	-21.70	141.48	143.13	351.28	1.97
4100.00	10.77	353.31	4093.17	158.50	-22.74	158.50	160.12	351.83	2.23
4200.00	12.74	358.17	4191.07	178.80	-24.18	178.80	180.43	352.30	2.20
4300.00	13.63	357.90	4288.44	201.60	-24.97	201.60	203.14	352.94	0.89
4400.00	14.75	2.80	4385.39	226.10	-24.78	226.10	227.45	353.75	1.65
4500.00	16.86	358.12	4481.60	253.31	-24.63	253.31	254.51	354.45	2.46
4600.00	18.98	356.79	4576.74	284.05	-26.01	284.05	285.24	354.77	2.16
4700.00	21.05	355.49	4670.70	318.20	-28.34	318.20	319.46	354.91	2.12
4800.00	23.11	354.83	4763.36	355.66	-31.52	355.66	357.05	354.94	2.08
4900.00	25.02	354.53	4854.66	396.26	-35.31	396.26	397.83	354.91	1.91
5000.00	25.92	355.16	4944.94	439.09	-39.17	439.09	440.84	354.90	0.94
5100.00	26.40	356.58	5034.69	483.07	-42.34	483.07	484.92	354.99	0.79
5200.00	27.96	353.80	5123.65	528.57	-46.19	528.57	530.58	355.01	2.01
5300.00	29.63	353.78	5211.29	576.45	-51.40	576.45	578.73	354.90	1.67
5400.00	31.27	351.91	5297.49	626.73	-57.73	626.73	629.38	354.74	1.90
5500.00	32.49	350.40	5382.40	678.91	-65.86	678.91	682.10	354.46	1.45
5600.00	33.89	349.38	5466.09	732.80	-75.48	732.80	736.68	354.12	1.51
5700.00	35.67	345.65	5548.23	788.46	-87.85	788.46	793.34	353.64	2.77
5800.00	37.46	343.18	5628.55	845.82	-103.88	845.82	852.17	353.00	2.32
5900.00	37.42	340.26	5707.95	903.53	-122.95	903.53	911.86	352.25	1.78
6000.00	35.98	342.34	5788.13	960.12	-142.13	960.12	970.58	351.58	1.91
6100.00	34.34	340.40	5869.89	1014.69	-160.50	1014.69	1027.30	351.01	1.98
6200.00	33.35	338.54	5952.94	1066.84	-180.02	1066.84	1081.92	350.42	1.43
6300.00	32.86	335.04	6036.72	1117.03	-201.53	1117.03	1135.06	349.77	1.97
6400.00	32.83	333.24	6120.73	1165.83	-225.19	1165.83	1187.38	349.07	0.98
6500.00	33.00	330.84	6204.68	1213.82	-250.66	1213.82	1239.43	348.33	1.31
6600.00	33.08	327.27	6288.52	1260.56	-278.69	1260.56	1291.00	347.53	1.95
6700.00	32.44	324.98	6372.61	1305.49	-308.84	1305.49	1341.52	346.69	1.39
6800.00	30.72	322.82	6457.80	1347.81	-339.67	1347.81	1389.95	345.85	2.06
6900.00	29.29	320.67	6544.40	1387.08	-370.61	1387.08	1435.74	345.04	1.78
7000.00	28.27	317.68	6632.05	1423.52	-402.06	1423.52	1479.21	344.23	1.77
7100.00	27.08	314.21	6720.61	1456.91	-434.33	1456.91	1520.27	343.40	2.00
7200.00	26.07	312.08	6810.05	1487.51	-466.95	1487.51	1559.08	342.57	1.39
7300.00	24.14	310.44	6900.60	1515.50	-498.83	1515.50	1595.48	341.78	2.05
7400.00	23.89	305.54	6991.95	1540.54	-530.87	1540.54	1629.44	340.99	2.01
7500.00	23.42	303.99	7083.55	1563.42	-563.84	1563.42	1661.99	340.17	0.78
HORIZONTAL DISPLACEMENT IS 1661.99 FEET AT 340.17 DEGREES									