



Company: NOBLE
 Lease/Well: RYANN STATE/# C 21-27
 Location:
 Rig Name: PRODUCTION
 State/County: COLORADO/WELD COUNTY
 Latitude: 40.30
 GRID North is 0.61 Degrees East of True North
 VS-Azi: 0.00 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : GL

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: run1-01.ut
 Minimum Curvature Method
 Report Date/Time: 3/18/2011 / 21:51

Vaughn Energy Services
 Rifle, Colorado
 970-456-2071
 Garry Fowler
 Ryann State C 21-27

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	0.92	229.12	100.00	-0.53	-0.61	-0.53	0.81	229.12	0.92
200.00	0.83	229.39	199.98	-1.52	-1.76	-1.52	2.33	229.20	0.10
300.00	0.67	238.25	299.98	-2.30	-2.81	-2.30	3.63	230.70	0.19
400.00	0.62	246.50	399.97	-2.83	-3.81	-2.83	4.74	233.41	0.11
500.00	0.63	278.13	499.96	-2.96	-4.85	-2.96	5.68	238.58	0.34
600.00	0.62	275.85	599.96	-2.83	-5.94	-2.83	6.58	244.51	0.03
700.00	0.63	276.73	699.95	-2.71	-7.02	-2.71	7.52	248.87	0.01
800.00	0.61	270.34	799.95	-2.64	-8.09	-2.64	8.51	251.90	0.07
900.00	0.68	271.16	899.94	-2.63	-9.21	-2.63	9.58	254.07	0.08
1000.00	0.63	271.45	999.93	-2.60	-10.35	-2.60	10.68	255.89	0.06
1100.00	0.68	271.70	1099.93	-2.57	-11.50	-2.57	11.78	257.39	0.06
1200.00	0.77	286.79	1199.92	-2.36	-12.73	-2.36	12.95	259.50	0.21
1300.00	0.74	292.47	1299.91	-1.92	-13.97	-1.92	14.10	262.18	0.08
1400.00	0.78	288.64	1399.90	-1.45	-15.22	-1.45	15.29	264.54	0.06
1500.00	0.73	274.68	1499.89	-1.18	-16.50	-1.18	16.54	265.89	0.19
1600.00	0.86	223.69	1599.88	-1.68	-17.65	-1.68	17.73	264.58	0.69
1700.00	0.88	198.81	1699.87	-2.95	-18.42	-2.95	18.65	260.90	0.38
1800.00	1.08	170.66	1799.86	-4.61	-18.51	-4.61	19.08	256.02	0.51
1900.00	1.52	171.73	1899.83	-6.85	-18.17	-6.85	19.42	249.34	0.44
2000.00	1.74	170.07	1999.79	-9.66	-17.72	-9.66	20.18	241.41	0.22
2100.00	2.19	171.03	2099.73	-13.03	-17.16	-13.03	21.55	232.78	0.45
2200.00	2.91	159.74	2199.63	-17.30	-15.98	-17.30	23.55	222.73	0.88
2300.00	2.71	158.75	2299.51	-21.89	-14.24	-21.89	26.11	213.06	0.21
2400.00	2.67	158.73	2399.40	-26.26	-12.54	-26.26	29.10	205.54	0.04
2500.00	2.23	176.89	2499.31	-30.37	-11.59	-30.37	32.50	200.90	0.88
2600.00	1.97	178.80	2599.25	-34.03	-11.45	-34.03	35.90	198.60	0.27
2700.00	1.82	177.62	2699.19	-37.34	-11.35	-37.34	39.03	196.91	0.15
2800.00	1.81	178.01	2799.14	-40.51	-11.23	-40.51	42.03	195.50	0.02
2900.00	1.83	201.19	2899.09	-43.58	-11.75	-43.58	45.13	195.09	0.73
3000.00	1.72	209.46	2999.04	-46.37	-13.07	-46.37	48.17	195.74	0.28
3100.00	1.24	209.98	3099.01	-48.61	-14.34	-48.61	50.68	196.44	0.47

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
3200.00	1.26	213.26	3198.99	-50.46	-15.49	-50.46	52.79	197.06	0.07
3300.00	1.42	217.35	3298.96	-52.36	-16.84	-52.36	55.00	197.83	0.19
3400.00	1.47	222.69	3398.93	-54.29	-18.46	-54.29	57.34	198.78	0.14
3500.00	1.54	235.06	3498.89	-56.00	-20.43	-56.00	59.61	200.04	0.33
3600.00	1.79	229.23	3598.85	-57.79	-22.71	-57.79	62.09	201.46	0.30
3700.00	2.26	225.57	3698.79	-60.19	-25.30	-60.19	65.29	202.80	0.49
3800.00	2.43	225.44	3798.71	-63.06	-28.22	-63.06	69.09	204.11	0.17
3900.00	2.54	224.61	3898.61	-66.12	-31.29	-66.12	73.16	205.32	0.12
4000.00	2.98	220.44	3998.50	-69.68	-34.53	-69.68	77.77	206.36	0.48
4100.00	2.68	220.11	4098.37	-73.44	-37.72	-73.44	82.57	207.19	0.30
4200.00	2.20	227.69	4198.28	-76.53	-40.65	-76.53	86.65	207.98	0.57
4300.00	2.02	221.28	4298.21	-79.15	-43.24	-79.15	90.19	208.65	0.30
4400.00	1.89	233.07	4398.16	-81.46	-45.72	-81.46	93.41	209.30	0.42
4500.00	1.77	237.88	4498.11	-83.27	-48.34	-83.27	96.29	210.14	0.19
4600.00	1.56	242.97	4598.06	-84.71	-50.86	-84.71	98.81	210.98	0.26
4700.00	1.23	216.62	4698.03	-86.19	-52.72	-86.19	101.03	211.45	0.71
4800.00	0.61	183.49	4798.02	-87.58	-53.39	-87.58	102.57	211.37	0.79
4900.00	0.65	180.68	4898.02	-88.68	-53.43	-88.68	103.53	211.07	0.05
5000.00	0.67	183.10	4998.01	-89.82	-53.47	-89.82	104.53	210.76	0.04
5100.00	0.75	179.43	5098.00	-91.06	-53.49	-91.06	105.61	210.43	0.10
5200.00	0.99	175.67	5197.99	-92.58	-53.42	-92.58	106.89	209.99	0.24
5300.00	1.15	175.42	5297.97	-94.44	-53.27	-94.44	108.43	209.43	0.16
5400.00	1.17	173.79	5397.95	-96.45	-53.08	-96.45	110.09	208.83	0.04
5500.00	1.17	172.19	5497.93	-98.47	-52.84	-98.47	111.75	208.22	0.03
5600.00	0.89	159.85	5597.92	-100.21	-52.43	-100.21	113.10	207.62	0.35
5700.00	0.64	87.29	5697.91	-100.91	-51.61	-100.91	113.34	207.09	0.93
5800.00	0.23	55.85	5797.91	-100.77	-50.88	-100.77	112.89	206.79	0.46
5900.00	0.40	27.70	5897.90	-100.35	-50.56	-100.35	112.36	206.74	0.23
6000.00	0.52	14.08	5997.90	-99.60	-50.28	-99.60	111.57	206.79	0.16
6100.00	0.51	12.89	6097.90	-98.72	-50.07	-98.72	110.69	206.90	0.02
6200.00	0.50	16.83	6197.89	-97.87	-49.85	-97.87	109.83	206.99	0.04
6300.00	0.33	19.05	6297.89	-97.17	-49.63	-97.17	109.11	207.05	0.17
6400.00	0.25	50.43	6397.89	-96.76	-49.36	-96.76	108.63	207.03	0.17
6500.00	0.23	57.58	6497.89	-96.52	-49.03	-96.52	108.25	206.93	0.03
6600.00	0.44	92.88	6597.89	-96.43	-48.47	-96.43	107.92	206.69	0.28
6700.00	0.37	104.83	6697.88	-96.53	-47.78	-96.53	107.71	206.34	0.10
HORIZONTAL DISPLACEMENT IS 107.71 FEET AT 206.34 DEGREES									