



Company: NOBLE ENERGY
Lease/Well: SPIKE STATE/D28-5
Location:
Rig Name: PRODUCTION
State/County: COLORADO/WELD
Latitude: 40.20
GRID North is 0.60 Degrees East of True North
VS-Azi: 0.00 Degrees

FIELD COPY ONLY (NOT DEFINITIVE)

DEPTH REFERENCE : GL = 0'

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: spikestad28-5raw.ut
Minimum Curvature Method
Report Date/Time: 4/5/2011 / 19:06

Vaughn Energy Services
Rifle, Colorado
970 456 2071
Surveyor: S.Anderson
Spike State D28-5 API# 05-123-15989

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	0.18	257.57	100.00	-0.03	-0.15	-0.03	0.16	257.57	0.18
200.00	0.08	27.05	200.00	0.00	-0.27	0.00	0.27	269.53	0.24
300.00	0.28	349.32	300.00	0.30	-0.28	0.30	0.41	316.83	0.22
400.00	0.29	345.23	400.00	0.78	-0.39	0.78	0.87	333.38	0.02
500.00	0.07	357.54	500.00	1.08	-0.46	1.08	1.18	337.07	0.22
600.00	0.73	323.61	599.99	1.66	-0.84	1.66	1.86	333.11	0.68
700.00	0.63	296.95	699.99	2.42	-1.71	2.42	2.97	324.79	0.33
800.00	0.76	295.17	799.98	2.95	-2.80	2.95	4.07	316.55	0.13
900.00	0.81	321.68	899.97	3.79	-3.83	3.79	5.39	314.66	0.36
1000.00	0.87	333.52	999.96	5.02	-4.61	5.02	6.81	317.44	0.18
1100.00	0.79	350.25	1099.95	6.37	-5.06	6.37	8.14	321.55	0.25
1200.00	0.67	290.77	1199.94	7.26	-5.72	7.26	9.24	321.75	0.73
1300.00	0.66	291.21	1299.94	7.67	-6.80	7.67	10.25	318.45	0.01
1400.00	0.79	291.54	1399.93	8.13	-7.97	8.13	11.39	315.57	0.13
1500.00	0.78	292.36	1499.92	8.64	-9.24	8.64	12.65	313.08	0.01
1600.00	0.76	280.72	1599.91	9.02	-10.52	9.02	13.86	310.62	0.16
1700.00	0.70	272.86	1699.90	9.18	-11.78	9.18	14.94	307.92	0.12
1800.00	0.68	273.75	1799.90	9.25	-12.99	9.25	15.94	305.45	0.02
1900.00	0.72	272.07	1899.89	9.31	-14.21	9.31	16.99	303.23	0.05
2000.00	0.69	268.67	1999.88	9.32	-15.44	9.32	18.04	301.11	0.05
2100.00	0.50	273.98	2099.87	9.33	-16.48	9.33	18.94	299.53	0.20
2200.00	0.61	288.29	2199.87	9.53	-17.42	9.53	19.86	298.69	0.18
2300.00	0.79	308.82	2299.86	10.13	-18.46	10.13	21.06	298.75	0.30
2400.00	0.69	323.96	2399.85	11.05	-19.35	11.05	22.28	299.72	0.22
2500.00	0.68	318.01	2499.85	11.98	-20.10	11.98	23.40	300.78	0.07
2600.00	0.73	329.62	2599.84	12.97	-20.82	12.97	24.53	301.91	0.15
2700.00	0.86	331.99	2699.83	14.18	-21.50	14.18	25.75	303.41	0.13
2800.00	0.82	342.11	2799.82	15.52	-22.07	15.52	26.98	305.12	0.15
2900.00	0.60	330.62	2899.81	16.66	-22.55	16.66	28.04	306.46	0.26
3000.00	0.71	337.20	2999.81	17.69	-23.04	17.69	29.05	307.51	0.13
3100.00	0.53	341.56	3099.80	18.70	-23.43	18.70	29.98	308.59	0.18

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	0.20	7.19	3199.80	19.31	-23.56	19.31	30.46	309.35	0.36
3300.00	0.15	22.22	3299.80	19.61	-23.48	19.61	30.59	309.86	0.07
3400.00	0.25	31.74	3399.80	19.91	-23.32	19.91	30.66	310.49	0.11
3500.00	0.56	45.95	3499.79	20.44	-22.85	20.44	30.66	311.82	0.33
3600.00	0.92	48.29	3599.78	21.32	-21.90	21.32	30.56	314.24	0.36
3700.00	1.36	41.08	3699.76	22.75	-20.52	22.75	30.63	317.95	0.46
3800.00	1.48	42.00	3799.73	24.60	-18.87	24.60	31.01	322.51	0.13
3900.00	1.43	43.82	3899.70	26.47	-17.14	26.47	31.53	327.07	0.07
4000.00	1.41	55.96	3999.67	28.06	-15.25	28.06	31.94	331.47	0.30
4100.00	1.64	69.60	4099.64	29.24	-12.90	29.24	31.96	336.20	0.43
4200.00	1.36	80.16	4199.60	29.94	-10.39	29.94	31.70	340.86	0.39
4300.00	1.05	70.76	4299.58	30.45	-8.36	30.45	31.57	344.65	0.37
4400.00	1.25	68.15	4399.56	31.15	-6.49	31.15	31.82	348.24	0.21
4500.00	1.09	65.45	4499.54	31.96	-4.61	31.96	32.29	351.80	0.17
4600.00	1.14	71.86	4599.52	32.66	-2.80	32.66	32.78	355.10	0.13
4700.00	1.28	71.16	4699.50	33.33	-0.80	33.33	33.34	358.63	0.15
4800.00	1.52	70.19	4799.47	34.14	1.51	34.14	34.18	2.54	0.24
4900.00	1.82	64.67	4899.43	35.27	4.20	35.27	35.52	6.79	0.34
5000.00	1.68	59.78	4999.38	36.69	6.90	36.69	37.33	10.65	0.20
5100.00	1.48	56.33	5099.34	38.15	9.25	38.15	39.25	13.63	0.22
5200.00	1.37	50.08	5199.31	39.63	11.24	39.63	41.19	15.83	0.19
5300.00	0.90	59.22	5299.29	40.79	12.82	40.79	42.76	17.45	0.50
5400.00	0.93	61.19	5399.28	41.59	14.21	41.59	43.95	18.87	0.05
5500.00	1.09	64.03	5499.26	42.39	15.78	42.39	45.23	20.41	0.16
5600.00	1.24	61.10	5599.24	43.33	17.58	43.33	46.76	22.08	0.17
5700.00	0.73	66.41	5699.23	44.11	19.11	44.11	48.07	23.42	0.52
5800.00	0.71	63.92	5799.22	44.64	20.25	44.64	49.02	24.40	0.03
5900.00	0.23	65.86	5899.21	45.00	20.99	45.00	49.65	25.01	0.48
6000.00	0.49	64.74	5999.21	45.26	21.56	45.26	50.13	25.47	0.26
6100.00	0.47	69.48	6099.21	45.58	22.33	45.58	50.76	26.10	0.04
6200.00	0.68	60.34	6199.20	46.02	23.22	46.02	51.54	26.78	0.23
6300.00	0.91	72.98	6299.19	46.54	24.50	46.54	52.60	27.76	0.29
6400.00	0.98	75.26	6399.18	47.00	26.09	47.00	53.75	29.04	0.08
6500.00	1.35	74.82	6499.16	47.52	28.06	47.52	55.19	30.56	0.37
6600.00	1.62	77.62	6599.13	48.14	30.58	48.14	57.03	32.43	0.28
6700.00	1.78	74.31	6699.08	48.86	33.46	48.86	59.22	34.40	0.18
6800.00	0.70	80.31	6799.06	49.38	35.55	49.38	60.85	35.75	1.08
6900.00	0.59	79.69	6899.05	49.58	36.66	49.58	61.66	36.48	0.11

HORIZONTAL DISPLACEMENT IS
61.66 FEET AT 36.48 DEGREES