

Company: NOBLE ENERGY

Well: LINDSAY C33-1



Rig Name: PRODUCTION

State/County: COLORADO/WELD

Latitude: 40.26, Longitude: -104.55

GRID North is 0.61 Degrees East of True North

VS-Azi: 0.00 Degrees

**FIELD COPY ONLY (NOT DEFINITIVE)**

Service Company : VAUGHN ENERGY SERVICES

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01.ut

Minimum Curvature Method

Report Date/Time: 7/6/2011 / 01:59

VAUGHN ENERGY SERVICES

866-835-8333

DENVER, COLORADO

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	0.55	224.30	100.00	-0.34	-0.33	-0.34	0.48	224.30	0.55
200.00	0.70	213.22	199.99	-1.20	-1.00	-1.20	1.56	219.97	0.20
300.00	0.40	246.86	299.99	-1.85	-1.66	-1.85	2.48	221.94	0.43
400.00	0.43	219.33	399.99	-2.27	-2.22	-2.27	3.18	224.27	0.20
500.00	0.49	209.20	499.98	-2.94	-2.66	-2.94	3.96	222.20	0.10
600.00	0.46	244.84	599.98	-3.48	-3.23	-3.48	4.75	222.92	0.29
700.00	0.19	217.82	699.98	-3.78	-3.70	-3.78	5.29	224.39	0.31
800.00	0.52	211.17	799.98	-4.30	-4.03	-4.30	5.89	223.20	0.34
900.00	0.35	237.10	899.97	-4.85	-4.53	-4.85	6.64	223.02	0.26
1000.00	0.48	223.74	999.97	-5.32	-5.08	-5.32	7.35	223.65	0.16
1100.00	0.17	162.76	1099.97	-5.76	-5.32	-5.76	7.85	222.71	0.42
1200.00	0.08	133.20	1199.97	-5.95	-5.23	-5.95	7.92	221.31	0.11
1300.00	0.12	61.32	1299.97	-5.94	-5.09	-5.94	7.83	220.56	0.12
1400.00	0.26	43.53	1399.97	-5.73	-4.84	-5.73	7.50	220.18	0.15
1500.00	0.37	33.13	1499.97	-5.29	-4.50	-5.29	6.95	220.39	0.12
1600.00	0.21	29.02	1599.96	-4.86	-4.24	-4.86	6.45	221.08	0.16
1700.00	0.34	61.47	1699.96	-4.56	-3.89	-4.56	5.99	220.47	0.19
1800.00	0.25	35.62	1799.96	-4.24	-3.51	-4.24	5.51	219.56	0.16
1900.00	0.23	101.86	1899.96	-4.11	-3.18	-4.11	5.20	217.76	0.26
2000.00	0.49	128.78	1999.96	-4.42	-2.66	-4.42	5.15	211.02	0.30
2100.00	0.65	141.57	2099.95	-5.13	-1.97	-5.13	5.50	201.01	0.21
2200.00	0.82	161.97	2199.95	-6.26	-1.39	-6.26	6.41	192.56	0.31
2300.00	1.04	184.81	2299.93	-7.85	-1.25	-7.85	7.94	189.04	0.43
2400.00	0.81	192.90	2399.92	-9.44	-1.48	-9.44	9.55	188.92	0.27
2500.00	0.84	203.48	2499.91	-10.79	-1.93	-10.79	10.97	190.14	0.15
2600.00	0.92	208.59	2599.90	-12.17	-2.61	-12.17	12.44	192.09	0.11
2700.00	0.77	218.35	2699.89	-13.40	-3.40	-13.40	13.82	194.26	0.21
2800.00	0.71	223.74	2799.88	-14.37	-4.25	-14.37	14.99	196.47	0.09
2900.00	0.83	248.43	2899.87	-15.09	-5.35	-15.09	16.01	199.54	0.35

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	0.45	249.64	2999.86	-15.49	-6.40	-15.49	16.76	202.44	0.38
3100.00	0.72	271.31	3099.86	-15.61	-7.40	-15.61	17.28	205.36	0.35
3200.00	0.64	261.95	3199.85	-15.68	-8.59	-15.68	17.88	208.71	0.14
3300.00	0.51	249.17	3299.85	-15.92	-9.56	-15.92	18.57	211.00	0.18
3400.00	0.45	234.25	3399.84	-16.31	-10.30	-16.31	19.29	212.28	0.14
3500.00	0.47	224.25	3499.84	-16.83	-10.91	-16.83	20.06	212.94	0.08
3600.00	0.38	226.86	3599.84	-17.36	-11.44	-17.36	20.79	213.39	0.09
3700.00	0.65	211.41	3699.83	-18.07	-11.98	-18.07	21.68	213.54	0.30
3800.00	0.72	211.06	3799.83	-19.09	-12.60	-19.09	22.88	213.42	0.08
3900.00	0.76	219.73	3899.82	-20.15	-13.35	-20.15	24.17	213.53	0.12
4000.00	0.86	218.43	3999.81	-21.25	-14.24	-21.25	25.58	213.84	0.10
4100.00	0.96	222.47	4099.79	-22.45	-15.28	-22.45	27.16	214.23	0.12
4200.00	1.11	230.24	4199.78	-23.69	-16.58	-23.69	28.92	215.00	0.20
4300.00	1.20	246.93	4299.76	-24.72	-18.29	-24.72	30.75	216.50	0.35
4400.00	1.28	258.05	4399.74	-25.36	-20.34	-25.36	32.51	218.74	0.25
4500.00	1.34	265.28	4499.71	-25.68	-22.60	-25.68	34.21	221.34	0.18
4600.00	1.29	295.73	4599.68	-25.29	-24.79	-25.29	35.41	224.42	0.69
4700.00	1.61	294.63	4699.65	-24.21	-27.08	-24.21	36.33	228.20	0.32
4800.00	1.74	306.11	4799.61	-22.74	-29.58	-22.74	37.31	232.46	0.36
4900.00	1.66	296.06	4899.57	-21.20	-32.11	-21.20	38.48	236.56	0.31
5000.00	1.36	292.39	4999.53	-20.12	-34.51	-20.12	39.95	239.76	0.32
5100.00	0.56	284.74	5099.52	-19.54	-36.08	-19.54	41.03	241.56	0.81
5200.00	0.57	356.74	5199.51	-18.92	-36.57	-18.92	41.18	242.65	0.66
5300.00	1.41	8.63	5299.50	-17.21	-36.42	-17.21	40.28	244.71	0.86
5400.00	1.78	18.48	5399.46	-14.53	-35.74	-14.53	38.58	247.88	0.46
5500.00	0.95	42.06	5499.43	-12.44	-34.70	-12.44	36.86	250.27	0.98
5600.00	0.65	102.11	5599.42	-11.95	-33.58	-11.95	35.65	250.42	0.84
5700.00	0.65	131.67	5699.42	-12.44	-32.60	-12.44	34.90	249.11	0.33
5800.00	0.57	173.35	5799.41	-13.32	-32.12	-13.32	34.77	247.48	0.44
5900.00	0.26	31.68	5899.41	-13.61	-31.94	-13.61	34.72	246.91	0.79
6000.00	0.27	49.97	5999.41	-13.27	-31.64	-13.27	34.31	247.25	0.08
6100.00	0.17	105.57	6099.41	-13.16	-31.32	-13.16	33.97	247.21	0.22
6200.00	0.14	19.36	6199.41	-13.08	-31.14	-13.08	33.77	247.21	0.21
6300.00	0.26	49.75	6299.41	-12.82	-30.92	-12.82	33.47	247.49	0.15
6400.00	0.16	184.59	6399.41	-12.81	-30.76	-12.81	33.32	247.40	0.38
6500.00	0.18	133.12	6499.41	-13.05	-30.66	-13.05	33.32	246.94	0.15
6600.00	0.21	228.93	6599.40	-13.28	-30.68	-13.28	33.43	246.60	0.29
6700.00	0.07	268.47	6699.40	-13.40	-30.88	-13.40	33.67	246.54	0.16
6800.00	0.19	133.25	6799.40	-13.52	-30.83	-13.52	33.66	246.32	0.25
6850.00	0.16	112.70	6849.40	-13.60	-30.70	-13.60	33.58	246.11	0.14

HORIZONTAL DISPLACEMENT IS
33.58 FEET AT 246.11 DEGREES