



Company: Noble Energy
 Rig: Production/Lightning g
 Latitude: 40.399
 Longitude: -104.822
 API # 05-123-23651
 Date: 2/20/13

Well: Steve J 18-23
 Location: Weld Co.
 North Reference: G.C.-0.44
 Depth Reference: Ground Level
 Surveyor: Robert Hooper
 VS: 0.000

MS Gyro Survey Calculations

Depth	Inc	AzG	N/-S	E/-W	TVD	DL	VS	CD	Cbrg
100.00	0.78	344.57	0.65	-0.18	100.00	0.78	0.65	0.68	344.57
200.00	0.78	343.23	1.95	-0.56	199.99	0.02	1.95	2.03	344.13
300.00	0.59	340.09	3.09	-0.93	299.98	0.18	3.09	3.22	343.29
400.00	0.53	343.22	4.02	-1.24	399.98	0.07	4.02	4.21	342.89
500.00	0.16	294.64	4.52	-1.50	499.97	0.44	4.52	4.76	341.70
600.00	0.27	275.59	4.60	-1.86	599.97	0.13	4.60	4.96	338.04
700.00	0.25	259.37	4.58	-2.30	699.97	0.08	4.58	5.13	333.33
800.00	0.39	252.85	4.44	-2.84	799.97	0.15	4.44	5.27	327.45
900.00	1.01	169.40	3.48	-3.00	899.96	1.04	3.48	4.59	319.26
1000.00	2.45	139.65	0.99	-1.45	999.92	1.65	0.99	1.76	304.23
1100.00	4.82	133.72	-3.54	2.96	1099.71	2.39	-3.54	4.62	140.07
1200.00	6.84	139.63	-10.98	9.86	1199.19	2.11	-10.98	14.76	138.09
1300.00	8.78	141.27	-21.48	18.49	1298.26	1.95	-21.48	28.34	139.27
1400.00	9.90	143.86	-34.38	28.34	1396.93	1.19	-34.38	44.55	140.50
1500.00	12.10	141.74	-49.56	39.91	1495.08	2.24	-49.56	63.63	141.16
1600.00	12.73	138.94	-66.10	53.63	1592.75	0.87	-66.10	85.12	140.94
1700.00	13.70	136.97	-83.06	68.95	1690.10	1.08	-83.06	107.95	140.30
1800.00	16.69	134.50	-101.79	87.29	1786.59	3.06	-101.79	134.09	139.39
1900.00	17.53	135.36	-122.57	108.11	1882.16	0.88	-122.57	163.44	138.59
2000.00	18.65	137.70	-145.12	129.46	1977.22	1.33	-145.12	194.47	138.26
2100.00	20.12	134.80	-169.07	152.42	2071.55	1.76	-169.07	227.63	137.96
2200.00	20.63	130.73	-192.68	177.98	2165.30	1.50	-192.68	262.30	137.27
2300.00	21.73	131.46	-216.43	205.20	2258.54	1.13	-216.43	298.24	136.53
2400.00	22.17	132.27	-241.38	233.03	2351.30	0.53	-241.38	335.51	136.01
2500.00	22.52	134.64	-267.52	260.62	2443.79	0.97	-267.52	373.49	135.75
2600.00	23.97	138.70	-296.25	287.66	2535.67	2.16	-296.25	412.93	135.84
2700.00	25.47	137.71	-327.42	315.54	2626.50	1.55	-327.42	454.72	136.06
2800.00	26.57	136.28	-359.49	345.47	2716.37	1.26	-359.49	498.58	136.14
2900.00	28.94	138.89	-393.88	376.84	2804.86	2.66	-393.88	545.11	136.27
3000.00	27.82	139.85	-429.95	407.79	2892.84	1.20	-429.95	592.58	136.51
3100.00	26.50	137.55	-464.25	437.90	2981.82	1.69	-464.25	638.19	136.67
3200.00	26.08	136.83	-496.74	468.00	3071.47	0.53	-496.74	682.47	136.71
3300.00	26.20	135.37	-528.49	498.55	3161.24	0.65	-528.49	726.53	136.67
3400.00	24.83	136.83	-559.52	528.43	3251.49	1.51	-559.52	769.61	136.64
3500.00	23.35	134.36	-588.69	556.97	3342.77	1.79	-588.69	810.41	136.59
3600.00	23.69	134.01	-616.51	585.59	3434.46	0.37	-616.51	850.29	136.47
3700.00	22.81	135.30	-644.24	613.67	3526.34	1.02	-644.24	889.75	136.39
3800.00	22.32	132.53	-670.86	641.30	3618.69	1.17	-670.86	928.08	136.29
3900.00	22.42	135.13	-697.21	668.75	3711.16	0.99	-697.21	966.09	136.19

4000.00	23.22	137.93	-725.36	695.41	3803.34	1.35	-725.36	1004.86	136.21
4100.00	25.79	136.13	-755.68	723.71	3894.33	2.68	-755.68	1046.33	136.24
4200.00	26.30	137.01	-787.58	753.89	3984.17	0.64	-787.58	1090.24	136.25
4300.00	26.85	138.18	-820.61	784.05	4073.60	0.76	-820.61	1134.96	136.31
4400.00	26.17	136.59	-853.46	814.26	4163.09	0.98	-853.46	1179.58	136.35
4500.00	25.18	138.23	-885.35	843.59	4253.22	1.21	-885.35	1222.90	136.38
4600.00	25.09	138.60	-917.12	871.78	4343.75	0.18	-917.12	1265.35	136.45
4700.00	26.45	134.18	-948.55	901.77	4433.81	2.35	-948.55	1308.79	136.45
4800.00	24.03	138.39	-979.30	931.27	4524.27	3.01	-979.30	1351.40	136.44
4900.00	22.28	140.87	-1009.23	956.75	4616.21	2.00	-1009.23	1390.66	136.53
5000.00	20.44	139.82	-1037.28	979.98	4709.34	1.88	-1037.28	1427.00	136.63
5100.00	17.37	141.83	-1062.37	1000.48	4803.93	3.13	-1062.37	1459.31	136.72
5200.00	15.59	143.83	-1084.95	1017.63	4899.82	1.88	-1084.95	1487.51	136.83
5300.00	14.07	145.84	-1105.86	1032.39	4996.49	1.60	-1105.86	1512.86	136.97
5400.00	13.16	141.99	-1124.88	1046.22	5093.68	1.29	-1124.88	1536.21	137.07
5500.00	11.28	140.10	-1141.36	1059.51	5191.41	1.92	-1141.36	1557.32	137.13
5600.00	9.68	138.88	-1155.19	1071.30	5289.74	1.62	-1155.19	1575.49	137.16
5700.00	8.06	137.03	-1166.65	1081.61	5388.54	1.64	-1166.65	1590.90	137.17
5800.00	6.32	134.25	-1175.62	1090.33	5487.75	1.78	-1175.62	1603.41	137.16
5900.00	5.61	131.82	-1182.72	1097.92	5587.21	0.75	-1182.72	1613.77	137.13
6000.00	3.81	130.99	-1188.16	1104.07	5686.87	1.80	-1188.16	1621.94	137.10
6100.00	1.98	124.70	-1191.33	1108.00	5786.74	1.86	-1191.33	1626.94	137.08
6200.00	0.69	188.79	-1192.90	1109.33	5886.71	1.79	-1192.90	1629.00	137.08
6300.00	0.41	192.17	-1193.84	1109.17	5986.71	0.28	-1193.84	1629.57	137.11
6400.00	0.06	228.57	-1194.22	1109.05	6086.70	0.36	-1194.22	1629.78	137.12
6500.00	0.37	250.35	-1194.37	1108.71	6186.70	0.32	-1194.37	1629.65	137.13
6600.00	0.55	258.86	-1194.57	1107.93	6286.70	0.19	-1194.57	1629.27	137.15
6700.00	0.78	266.20	-1194.71	1106.78	6386.69	0.25	-1194.71	1628.59	137.19
6800.00	1.31	266.85	-1194.82	1104.95	6486.68	0.53	-1194.82	1627.42	137.24
6900.00	1.38	268.42	-1194.91	1102.61	6586.65	0.07	-1194.91	1625.90	137.30
7000.00	1.73	266.82	-1195.03	1099.89	6686.61	0.36	-1195.03	1624.15	137.37
7100.00	1.53	266.82	-1195.19	1097.05	6786.57	0.20	-1195.19	1622.34	137.45
7200.00	1.23	236.82	-1195.85	1094.81	6886.54	0.77	-1195.85	1621.32	137.53
7300.00	1.03	181.82	-1197.34	1093.88	6986.53	1.06	-1197.34	1621.79	137.59
7400.00	1.43	176.74	-1199.49	1093.93	7086.50	0.41	-1199.49	1623.41	137.64
7500.00	1.93	166.82	-1202.38	1094.38	7186.46	0.58	-1202.38	1625.85	137.69
7600.00	2.11	147.82	-1205.58	1095.75	7286.40	0.69	-1205.58	1629.14	137.73
7700.00	1.84	128.81	-1208.15	1097.98	7386.34	0.71	-1208.15	1632.54	137.73
7720.00	1.74	126.42	-1208.53	1098.48	7406.33	0.63	-1208.53	1633.15	137.73