



Company: NOBLE ENERGY  
 Well: CHACON H13-18  
 Location: NENW SEC13-T3N-R65W  
 Rig Name: LIGHTNING WIRE  
 State/County: COLORADO/WELD  
 Latitude: 40.23



GRID North is 0.57 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: chaconh13-18-01.ut  
 Minimum Curvature Method  
 Report Date/Time: 3/8/2011 / 14:08

VAUGHN ENERGY SERVICES  
 CORPUS CHRISTI, TX  
 800-606-4976  
 SURVEYOR: CORY ALBERT

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	0.75	105.73	100.00	-0.18	0.63	-0.18	0.65	105.73	0.75
200.00	0.36	107.00	199.99	-0.44	1.55	-0.44	1.62	105.97	0.39
300.00	0.25	106.71	299.99	-0.60	2.06	-0.60	2.15	106.20	0.11
400.00	0.02	190.20	399.99	-0.68	2.27	-0.68	2.37	106.65	0.25
500.00	0.06	238.34	499.99	-0.72	2.22	-0.72	2.33	108.06	0.05
600.00	0.05	230.19	599.99	-0.78	2.14	-0.78	2.27	110.08	0.01
700.00	0.14	283.90	699.99	-0.78	1.98	-0.78	2.13	111.48	0.12
800.00	0.28	301.45	799.99	-0.62	1.66	-0.62	1.77	110.64	0.15
900.00	0.21	326.63	899.99	-0.35	1.35	-0.35	1.39	104.38	0.13
1000.00	0.18	323.27	999.99	-0.07	1.16	-0.07	1.16	93.44	0.03
1100.00	0.19	343.20	1099.99	0.21	1.01	0.21	1.04	78.16	0.06
1200.00	0.28	2.14	1199.99	0.62	0.98	0.62	1.15	57.73	0.12
1300.00	0.29	10.47	1299.99	1.12	1.03	1.12	1.52	42.79	0.04
1400.00	0.24	355.02	1399.98	1.57	1.06	1.57	1.90	33.96	0.09
1500.00	0.17	298.92	1499.98	1.85	0.91	1.85	2.07	26.19	0.20
1600.00	0.31	286.88	1599.98	2.00	0.52	2.00	2.07	14.67	0.15
1700.00	0.42	253.40	1699.98	1.98	-0.09	1.98	1.98	357.45	0.24
1800.00	0.66	261.04	1799.98	1.78	-1.02	1.78	2.05	330.31	0.25
1900.00	0.68	259.97	1899.97	1.59	-2.17	1.59	2.69	306.15	0.02
2000.00	0.77	257.43	1999.96	1.34	-3.41	1.34	3.67	291.40	0.09
2100.00	0.74	264.27	2099.95	1.13	-4.71	1.13	4.84	283.46	0.10
2200.00	0.92	278.62	2199.94	1.18	-6.15	1.18	6.26	280.90	0.28
2300.00	1.90	286.70	2299.91	1.78	-8.53	1.78	8.72	281.79	0.99
2400.00	2.10	292.48	2399.85	2.96	-11.82	2.96	12.18	284.06	0.29
2500.00	1.83	287.83	2499.79	4.15	-15.03	4.15	15.59	285.43	0.31
2600.00	1.67	288.71	2599.74	5.11	-17.94	5.11	18.65	285.90	0.16
2700.00	1.82	285.43	2699.70	6.00	-20.85	6.00	21.70	286.05	0.18
2800.00	2.19	289.65	2799.64	7.06	-24.18	7.06	25.19	286.28	0.39
2900.00	2.68	291.47	2899.55	8.56	-28.15	8.56	29.42	286.91	0.50
3000.00	3.75	287.53	2999.39	10.40	-33.44	10.40	35.02	287.27	1.10
3100.00	4.35	282.67	3099.14	12.22	-40.26	12.22	42.07	286.88	0.69
3200.00	3.43	283.71	3198.91	13.76	-46.87	13.76	48.84	286.36	0.93
3300.00	1.74	286.42	3298.80	14.89	-51.23	14.89	53.35	286.21	1.69
3400.00	0.24	291.36	3398.78	15.40	-52.88	15.40	55.08	286.24	1.51
3500.00	0.41	136.61	3498.78	15.21	-52.83	15.21	54.97	286.07	0.63
3600.00	0.48	106.84	3598.78	14.83	-52.18	14.83	54.24	285.87	0.24
3700.00	0.55	119.50	3698.78	14.47	-51.35	14.47	53.35	285.74	0.13
3800.00	1.85	168.56	3798.75	12.65	-50.62	12.65	52.17	284.03	1.55

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
3900.00	1.72	175.44	3898.70	9.56	-50.18	9.56	51.08	280.79	0.25
4000.00	1.65	188.67	3998.66	6.64	-50.27	6.64	50.71	277.53	0.40
4100.00	1.66	275.41	4098.63	5.36	-51.93	5.36	52.21	275.89	2.27
4200.00	2.22	290.59	4198.58	6.17	-55.18	6.17	55.53	276.38	0.75
4300.00	2.56	299.39	4298.49	7.95	-58.94	7.95	59.47	277.68	0.50
4400.00	2.68	302.38	4398.38	10.30	-62.86	10.30	63.70	279.30	0.18
4500.00	3.01	296.71	4498.26	12.73	-67.18	12.73	68.38	280.73	0.43
4600.00	3.16	328.74	4598.12	16.27	-70.96	16.27	72.80	282.91	1.71
4700.00	3.44	335.32	4697.96	21.35	-73.64	21.35	76.67	286.17	0.47
4800.00	4.23	346.60	4797.73	27.67	-75.75	27.67	80.64	290.06	1.08
4900.00	4.29	346.96	4897.46	34.90	-77.45	34.90	84.95	294.26	0.07
5000.00	2.84	350.05	4997.26	40.99	-78.72	40.99	88.75	297.50	1.47
5100.00	2.34	348.24	5097.16	45.42	-79.56	45.42	91.62	299.72	0.51
5200.00	1.22	344.45	5197.11	48.45	-80.27	48.45	93.76	301.12	1.12
5300.00	0.45	331.07	5297.10	49.82	-80.74	49.82	94.88	301.68	0.80
5400.00	0.10	350.66	5397.10	50.25	-80.95	50.25	95.27	301.83	0.36
5500.00	0.02	350.38	5497.10	50.35	-80.96	50.35	95.34	301.88	0.08
5600.00	0.31	354.35	5597.10	50.63	-80.99	50.63	95.51	302.01	0.29
5700.00	1.50	8.18	5697.08	52.19	-80.83	52.19	96.22	302.85	1.20
5800.00	1.18	5.70	5797.06	54.51	-80.54	54.51	97.25	304.09	0.33
5900.00	0.28	357.73	5897.05	55.77	-80.45	55.77	97.89	304.73	0.90
6000.00	0.55	298.90	5997.04	56.25	-80.88	56.25	98.51	304.82	0.47
6100.00	0.97	187.10	6097.04	55.64	-81.40	55.64	98.60	304.35	1.28
6200.00	1.83	155.81	6197.01	53.34	-80.85	53.34	96.86	303.41	1.12
6300.00	1.45	96.67	6296.97	51.73	-78.94	51.73	94.38	303.24	1.66
6400.00	2.13	12.95	6396.94	53.39	-77.26	53.39	93.92	304.64	2.44
6500.00	3.22	359.69	6496.83	58.01	-76.86	58.01	96.29	307.04	1.25
6600.00	3.85	340.18	6596.64	63.97	-78.02	63.97	100.89	309.35	1.35
6700.00	4.38	333.92	6696.38	70.57	-80.84	70.57	107.30	311.12	0.69
6800.00	5.19	328.83	6796.04	77.87	-84.86	77.87	115.17	312.54	0.91
6900.00	5.36	324.55	6895.61	85.55	-89.91	85.55	124.10	313.58	0.43
7000.00	2.41	330.40	6995.37	91.18	-93.66	91.18	130.71	314.23	2.98
7100.00	1.34	339.01	7095.32	94.10	-95.12	94.10	133.80	314.69	1.10
7200.00	0.97	352.25	7195.30	96.04	-95.65	96.04	135.54	315.12	0.45
7300.00	0.27	343.06	7295.29	97.10	-95.83	97.10	136.43	315.38	0.71
7400.00	0.26	187.48	7395.29	97.10	-95.93	97.10	136.50	315.35	0.52
7500.00	1.51	120.37	7495.28	96.21	-94.82	96.21	135.08	315.42	1.43
7514.00	1.51	120.23	7509.27	96.02	-94.51	96.02	134.73	315.46	0.03
<div> <div>HORIZONTAL DISPLACEMENT IS</div> <div>134.73 FEET AT 315.46 DEGREES</div> </div>									