



Company: NOBLE ENERGY  
Well: LARSON A25-14  
Location: SESW SEC.25-T6N-R64W  
Rig Name: LIGHTNING WIRE  
State/County: COLORADO/WELD  
Latitude: 40.45  
GRID North is 0.65 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: larsona25-14-01.ut  
Minimum Curvature Method  
Report Date/Time: 3/11/2011 / 13:02

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	0.09	134.24	100.00	-0.05	0.06	-0.05	0.08	134.24	0.09
200.00	0.09	157.40	200.00	-0.18	0.14	-0.18	0.23	141.94	0.04
300.00	0.12	179.27	300.00	-0.36	0.17	-0.36	0.40	154.44	0.05
400.00	0.17	181.23	400.00	-0.62	0.17	-0.62	0.64	164.59	0.05
500.00	0.20	171.51	500.00	-0.94	0.19	-0.94	0.96	168.41	0.04
600.00	0.20	172.23	600.00	-1.29	0.24	-1.29	1.31	169.33	0.00
700.00	0.15	165.13	700.00	-1.58	0.30	-1.58	1.61	169.31	0.06
800.00	0.11	155.72	800.00	-1.79	0.37	-1.79	1.83	168.32	0.04
900.00	0.17	168.32	900.00	-2.02	0.44	-2.02	2.07	167.75	0.07
1000.00	0.12	133.40	1000.00	-2.24	0.55	-2.24	2.31	166.31	0.10
1100.00	0.04	123.90	1100.00	-2.33	0.65	-2.33	2.42	164.40	0.08
1200.00	0.12	42.45	1200.00	-2.28	0.75	-2.28	2.40	161.78	0.12
1300.00	0.33	21.56	1300.00	-1.94	0.92	-1.94	2.15	154.51	0.22
1400.00	0.23	343.56	1399.99	-1.48	0.97	-1.48	1.77	146.72	0.20
1500.00	0.16	355.27	1499.99	-1.15	0.90	-1.15	1.46	141.85	0.08
1600.00	0.11	351.02	1599.99	-0.92	0.88	-0.92	1.27	136.24	0.05
1700.00	0.17	43.05	1699.99	-0.71	0.96	-0.71	1.20	126.53	0.13
1800.00	0.48	102.66	1799.99	-0.70	1.47	-0.70	1.62	115.39	0.42
1900.00	0.92	102.40	1899.98	-0.96	2.66	-0.96	2.82	109.86	0.44
2000.00	1.23	113.20	1999.97	-1.56	4.43	-1.56	4.70	109.36	0.37
2100.00	1.47	118.35	2099.94	-2.59	6.55	-2.59	7.05	111.58	0.27
2200.00	1.50	141.35	2199.91	-4.22	8.50	-4.22	9.49	116.43	0.59
2300.00	1.27	135.60	2299.88	-6.04	10.10	-6.04	11.77	120.90	0.27
2400.00	1.21	139.23	2399.85	-7.63	11.56	-7.63	13.85	123.43	0.10
2500.00	1.05	159.12	2499.83	-9.28	12.57	-9.28	15.63	126.44	0.42
2600.00	1.13	159.19	2599.82	-11.06	13.25	-11.06	17.26	129.85	0.08
2700.00	1.17	163.67	2699.80	-12.96	13.89	-12.96	18.99	133.02	0.10
2800.00	1.93	169.70	2799.76	-15.59	14.47	-15.59	21.28	137.13	0.77
2900.00	1.18	162.14	2899.72	-18.23	15.09	-18.23	23.67	140.38	0.77
3000.00	1.50	156.55	2999.69	-20.41	15.93	-20.41	25.89	142.04	0.34
3100.00	1.16	182.84	3099.67	-22.62	16.40	-22.62	27.94	144.06	0.69
3200.00	1.21	179.45	3199.65	-24.68	16.36	-24.68	29.61	146.47	0.09
3300.00	1.25	205.73	3299.62	-26.72	15.89	-26.72	31.09	149.25	0.56
3400.00	1.61	203.21	3399.59	-28.99	14.87	-28.99	32.58	152.85	0.36
3500.00	1.21	197.66	3499.56	-31.28	14.00	-31.28	34.27	155.89	0.42
3600.00	1.52	218.21	3599.54	-33.32	12.86	-33.32	35.72	158.89	0.57

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
3700.00	1.61	217.27	3699.50	-35.48	11.19	-35.48	37.20	162.49	0.10
3800.00	1.28	215.10	3799.47	-37.51	9.70	-37.51	38.74	165.50	0.33
3900.00	1.56	223.90	3899.44	-39.40	8.11	-39.40	40.23	168.37	0.36
4000.00	1.73	233.84	3999.39	-41.28	5.95	-41.28	41.70	171.80	0.33
4100.00	1.39	269.30	4099.36	-42.19	3.51	-42.19	42.33	175.24	1.01
4200.00	2.04	253.77	4199.31	-42.70	0.58	-42.70	42.70	179.22	0.79
4300.00	1.76	256.46	4299.26	-43.56	-2.62	-43.56	43.63	183.44	0.30
4400.00	1.78	252.31	4399.21	-44.39	-5.59	-44.39	44.74	187.18	0.13
4500.00	1.55	256.85	4499.17	-45.17	-8.39	-45.17	45.94	190.52	0.27
4600.00	1.63	271.65	4599.13	-45.43	-11.12	-45.43	46.77	193.76	0.42
4700.00	1.44	271.95	4699.10	-45.35	-13.80	-45.35	47.40	196.93	0.19
4800.00	0.99	280.29	4799.07	-45.15	-15.90	-45.15	47.87	199.40	0.48
4900.00	0.82	296.38	4899.06	-44.68	-17.39	-44.68	47.95	201.27	0.30
5000.00	0.46	219.46	4999.06	-44.67	-18.29	-44.67	48.27	202.26	0.84
5100.00	0.35	183.51	5099.05	-45.29	-18.56	-45.29	48.95	202.29	0.27
5200.00	0.84	146.94	5199.05	-46.21	-18.18	-46.21	49.66	201.48	0.59
5300.00	1.70	93.51	5299.03	-46.92	-16.30	-46.92	49.67	199.16	1.38
5400.00	1.66	70.86	5398.98	-46.54	-13.46	-46.54	48.44	196.13	0.66
5500.00	0.58	45.02	5498.96	-45.70	-11.74	-45.70	47.19	194.40	1.16
5600.00	0.44	6.90	5598.96	-44.97	-11.33	-44.97	46.37	194.15	0.36
5700.00	0.17	125.87	5698.96	-44.67	-11.17	-44.67	46.05	194.03	0.54
5800.00	0.91	223.53	5798.95	-45.33	-11.59	-45.33	46.79	194.34	0.95
5900.00	1.06	230.30	5898.94	-46.50	-12.85	-46.50	48.24	195.45	0.19
6000.00	0.72	255.34	5998.93	-47.25	-14.17	-47.25	49.32	196.69	0.51
6100.00	0.67	223.58	6098.92	-47.83	-15.18	-47.83	50.18	197.61	0.38
6200.00	1.21	240.80	6198.91	-48.77	-16.50	-48.77	51.49	198.70	0.60
6300.00	1.73	239.61	6298.87	-50.05	-18.72	-50.05	53.43	200.51	0.52
6400.00	1.93	235.89	6398.82	-51.76	-21.42	-51.76	56.01	202.49	0.24
6500.00	2.48	242.82	6498.75	-53.69	-24.74	-53.69	59.12	204.74	0.61
6600.00	2.67	240.67	6598.65	-55.82	-28.70	-55.82	62.77	207.21	0.22
6700.00	2.72	244.14	6698.54	-58.00	-32.87	-58.00	66.67	209.54	0.17
6788.00	2.14	250.45	6786.46	-59.46	-36.31	-59.46	69.67	211.41	0.73
<div> <div>HORIZONTAL DISPLACEMENT IS</div> <div>69.67 FEET AT 211.41 DEGREES</div> </div>									