

Company: NOBLE
Lease/Well: FURROW USX/AB15-10P



Rig Name: PRODUCTION
State/County: COLORADO/WELD
Latitude: 40.57
GRID North is 0.63 Degrees East of True North
VS-Azi: 0.00 Degrees



Depth Reference : KB = 0 FEET

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: furrowab15-10-01.ut
Minimum Curvature Method
Report Date/Time: 1/30/2013 / 14:03

Vaughn Energy Services
Rifle, Colorado
970-456-2071
Surveyor: Dustin Skoruppa
Furrow USX AB15-10P

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	0.66	266.76	100.00	-0.03	-0.58	-0.03	0.58	266.76	0.66
200.00	0.37	271.19	199.99	-0.06	-1.48	-0.06	1.48	267.72	0.30
300.00	0.13	161.52	299.99	-0.16	-1.76	-0.16	1.77	264.74	0.43
400.00	0.35	95.68	399.99	-0.30	-1.42	-0.30	1.45	257.95	0.32
500.00	0.21	93.98	499.99	-0.35	-0.93	-0.35	0.99	249.52	0.14
600.00	0.16	84.13	599.99	-0.34	-0.61	-0.34	0.70	240.41	0.06
700.00	0.20	172.78	699.99	-0.51	-0.45	-0.51	0.68	221.66	0.25
800.00	0.13	191.17	799.99	-0.79	-0.45	-0.79	0.91	209.62	0.09
900.00	0.39	280.30	899.99	-0.84	-0.81	-0.84	1.17	223.94	0.41
1000.00	0.66	279.08	999.98	-0.69	-1.71	-0.69	1.85	248.13	0.26
1100.00	0.60	276.11	1099.98	-0.54	-2.80	-0.54	2.85	259.07	0.07
1200.00	0.78	273.04	1199.97	-0.45	-4.00	-0.45	4.03	263.60	0.18
1300.00	0.86	278.19	1299.96	-0.31	-5.42	-0.31	5.43	266.77	0.11
1400.00	0.87	284.52	1399.95	-0.01	-6.90	-0.01	6.90	269.93	0.10
1500.00	0.93	301.91	1499.94	0.61	-8.33	0.61	8.35	274.20	0.28
1600.00	0.88	302.40	1599.92	1.45	-9.66	1.45	9.77	278.53	0.06
1700.00	0.84	307.19	1699.91	2.30	-10.89	2.30	11.13	281.94	0.08
1800.00	0.42	308.73	1799.91	2.98	-11.76	2.98	12.13	284.21	0.42
1900.00	0.14	41.92	1899.91	3.30	-11.97	3.30	12.42	285.40	0.45
2000.00	0.30	316.78	1999.91	3.58	-12.07	3.58	12.59	286.52	0.32

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
2100.00	0.46	303.45	2099.90	3.99	-12.58	3.99	13.20	287.59	0.18
2200.00	0.58	288.13	2199.90	4.37	-13.39	4.37	14.09	288.06	0.18
2300.00	0.68	318.07	2299.89	4.97	-14.27	4.97	15.11	289.19	0.34
2400.00	1.01	276.59	2399.88	5.51	-15.54	5.51	16.49	289.53	0.67
2500.00	1.46	272.02	2499.86	5.66	-17.69	5.66	18.57	287.74	0.46
2600.00	1.57	254.95	2599.83	5.35	-20.29	5.35	20.98	284.77	0.46
2700.00	1.35	263.82	2699.79	4.87	-22.78	4.87	23.29	282.06	0.31
2800.00	1.46	264.51	2799.76	4.62	-25.22	4.62	25.64	280.38	0.11
2900.00	1.35	266.41	2899.73	4.42	-27.66	4.42	28.01	279.08	0.12
3000.00	1.28	272.18	2999.71	4.39	-29.95	4.39	30.27	278.34	0.15
3100.00	1.47	268.01	3099.68	4.39	-32.34	4.39	32.64	277.73	0.21
3200.00	1.24	266.49	3199.65	4.28	-34.70	4.28	34.97	277.03	0.23
3300.00	1.26	257.78	3299.63	3.98	-36.86	3.98	37.07	276.16	0.19
3400.00	1.40	265.74	3399.60	3.66	-39.16	3.66	39.33	275.33	0.23
3500.00	1.47	295.62	3499.57	4.12	-41.53	4.12	41.74	275.66	0.74
3600.00	1.53	310.48	3599.54	5.54	-43.70	5.54	44.05	277.22	0.39
3700.00	0.97	320.13	3699.51	7.05	-45.26	7.05	45.81	278.86	0.59
3800.00	1.04	323.28	3799.50	8.44	-46.35	8.44	47.11	280.32	0.09
3900.00	1.18	324.49	3899.48	10.01	-47.49	10.01	48.54	281.90	0.14
4000.00	1.59	318.97	3999.45	11.89	-49.01	11.89	50.43	283.64	0.44
4100.00	1.57	319.82	4099.41	13.99	-50.80	13.99	52.69	285.40	0.03
4200.00	1.31	329.19	4199.38	16.01	-52.27	16.01	54.67	287.03	0.35
4300.00	1.23	349.78	4299.35	18.05	-53.04	18.05	56.03	288.79	0.46
4400.00	1.24	23.68	4399.33	20.09	-52.80	20.09	56.49	290.84	0.72
4500.00	2.39	35.36	4499.28	22.78	-51.16	22.78	56.00	294.00	1.20
4600.00	2.76	40.17	4599.18	26.32	-48.40	26.32	55.09	298.54	0.43
4700.00	3.10	48.79	4699.05	29.94	-44.81	29.94	53.90	303.75	0.55
4800.00	3.23	54.77	4798.90	33.35	-40.48	33.35	52.45	309.49	0.36
4900.00	3.37	57.44	4898.73	36.56	-35.70	36.56	51.10	315.68	0.21
5000.00	3.48	51.76	4998.55	40.02	-30.84	40.02	50.52	322.39	0.36
5100.00	2.40	58.25	5098.42	43.00	-26.67	43.00	50.60	328.19	1.14
5200.00	2.02	68.22	5198.35	44.75	-23.26	44.75	50.44	332.54	0.54
5300.00	1.19	95.31	5298.31	45.31	-20.59	45.31	49.77	335.56	1.10
5400.00	1.02	128.48	5398.29	44.66	-18.86	44.66	48.48	337.11	0.65
5500.00	0.97	152.07	5498.28	43.36	-17.77	43.36	46.86	337.72	0.41
5600.00	1.07	135.70	5598.26	41.94	-16.72	41.94	45.15	338.27	0.31
5700.00	0.28	86.29	5698.25	41.29	-15.82	41.29	44.22	339.03	0.91
5800.00	0.46	77.70	5798.25	41.39	-15.18	41.39	44.09	339.86	0.19
5900.00	0.67	78.98	5898.25	41.59	-14.22	41.59	43.95	341.12	0.21
6000.00	0.65	75.86	5998.24	41.84	-13.10	41.84	43.84	342.61	0.04
6100.00	0.42	88.87	6098.23	41.98	-12.19	41.98	43.72	343.81	0.26
6200.00	0.68	99.26	6198.23	41.90	-11.24	41.90	43.38	344.98	0.27

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
6300.00	0.72	94.64	6298.22	41.75	-10.03	41.75	42.94	346.49	0.07
6400.00	0.53	84.35	6398.22	41.74	-8.94	41.74	42.69	347.92	0.22
6500.00	0.58	78.38	6498.21	41.89	-7.98	41.89	42.64	349.22	0.08
6600.00	0.54	60.40	6598.21	42.23	-7.07	42.23	42.81	350.49	0.18
6700.00	0.67	66.58	6698.20	42.69	-6.13	42.69	43.13	351.83	0.14
6800.00	0.70	109.99	6798.19	42.71	-5.02	42.71	43.01	353.29	0.51
6900.00	0.42	154.49	6898.19	42.18	-4.29	42.18	42.39	354.19	0.50
7000.00	0.05	113.82	6998.19	41.83	-4.10	41.83	42.03	354.40	0.38
7100.00	0.44	160.82	7098.19	41.45	-3.93	41.45	41.64	354.58	0.41
7172.00	0.18	53.55	7170.19	41.25	-3.75	41.25	41.42	354.81	0.73