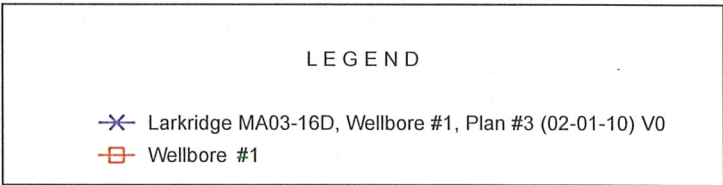
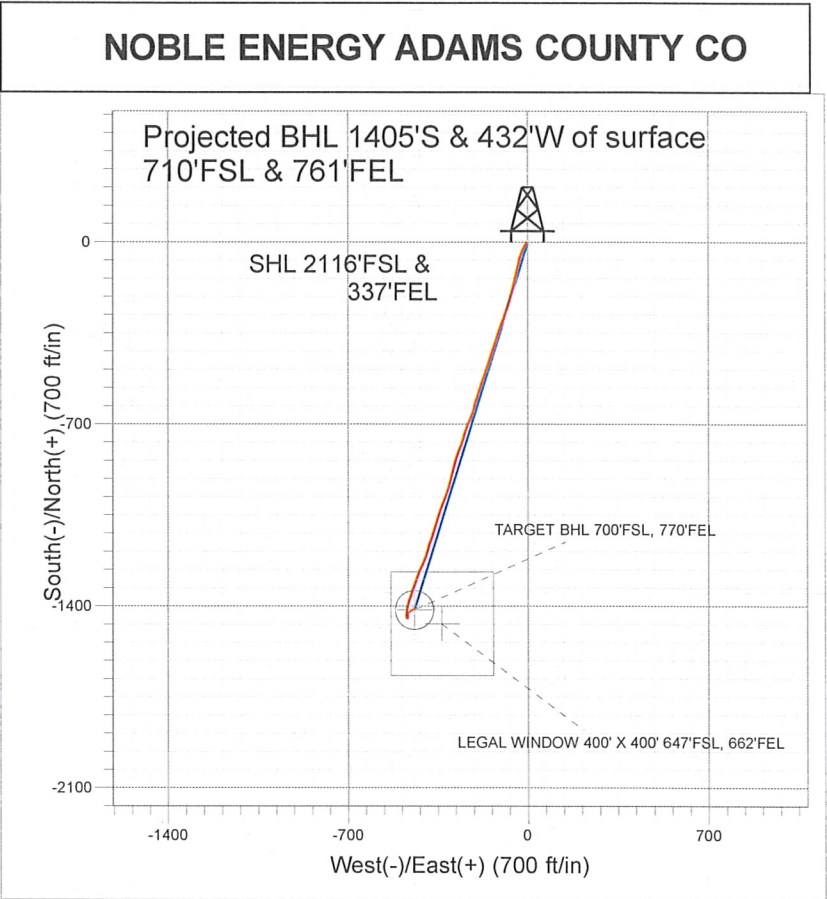
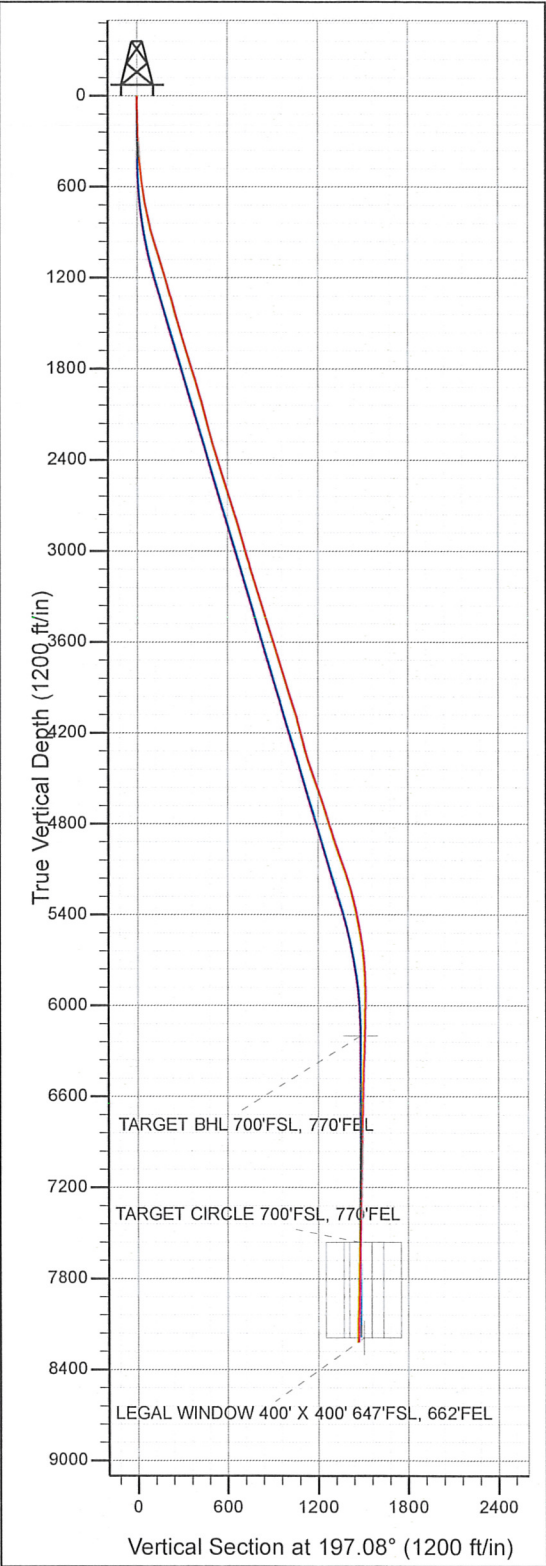




Well Name: **Larkridge MA03-16D**  
 Surface Location: Larkridge MA 03-23D Pad Sec.3-T1S-R68W  
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone  
 Ground Elevation: 5167.0  
 +N/-S+E/-W    Northing    Easting    Latitude    Longitude    Slot  
 0.0    0.0 1240496.58 3145846.34 39° 59' 32.543 N 104° 58' 46.060 W  
 Original Well Elev    WELL @ 5180.0ft (Original Well Elev)



# Final Survey Plot

Projected Final Survey -  
 8436'MD & 8219'TVD @ 1469' VS  
 1.7 deg Inc 56.0 deg AZ

Project: SEC 3-T1S-R68W  
 Site: Larkridge MA 03-23D Pad Sec.3-T1S-R68W  
 Well: Larkridge MA03-16D  
 Plan: Wellbore #1

Company:	NOBLE ENERGY ADAMS COUNTY CO	Local Co-ordinate Reference:	Well Larkridge MA03-16D
Project:	SEC.3-T1S-R68W	TVD Reference:	WELL @ 5180.0ft (Original Well Elev)
Site:	Larkridge MA 03-23D Pad Sec.3-T1S-R68W	MD Reference:	WELL @ 5180.0ft (Original Well Elev)
Well:	Larkridge MA03-16D	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM den0-adp01 Server Data

Project	SEC.3-T1S-R68W, Adams County, Colorado		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	Larkridge MA 03-23D Pad Sec.3-T1S-R68W				
Site Position:		Northing:	1,240,498.18 ft	Latitude:	39° 59' 32.561 N
From:	Lat/Long	Easting:	3,145,806.27 ft	Longitude:	104° 58' 46.574 W
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.34 °

Well	Larkridge MA03-16D					
Well Position	+N/-S	0.0 ft	Northing:	1,240,496.58 ft	Latitude:	39° 59' 32.543 N
	+E/-W	0.0 ft	Easting:	3,145,846.34 ft	Longitude:	104° 58' 46.060 W
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,167.0 ft	

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	7/23/2009	9.16	66.76	53,108
	IGRF200510	12/31/2009	9.10	66.74	53,063

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	197.08	

Survey Program	Date 2/12/2010				
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
92.0	8,436.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
92.0	1.30	217.40	92.0	-0.8	-0.6	1.0	1.41	1.41	0.00
181.0	1.70	205.40	181.0	-2.8	-1.8	3.2	0.57	0.45	-13.48
271.0	2.30	212.50	270.9	-5.6	-3.4	6.3	0.72	0.67	7.89
363.0	4.10	213.70	362.8	-9.8	-6.2	11.2	1.96	1.96	1.30
453.0	6.00	212.50	452.4	-16.5	-10.5	18.8	2.11	2.11	-1.33
545.0	7.50	205.00	543.8	-26.0	-15.6	29.4	1.89	1.63	-8.15
636.0	8.50	199.10	633.9	-37.7	-20.3	42.0	1.42	1.10	-6.48
728.0	10.70	197.60	724.6	-52.3	-25.1	57.4	2.41	2.39	-1.63
820.0	13.00	194.90	814.6	-70.4	-30.4	76.3	2.57	2.50	-2.93
914.0	15.30	193.60	905.8	-92.7	-36.0	99.2	2.47	2.45	-1.38
1,008.0	16.80	191.20	996.1	-118.1	-41.6	125.1	1.74	1.60	-2.55



Company: NOBLE ENERGY ADAMS COUNTY CO  
Project: SEC.3-T1S-R68W  
Site: Larkridge MA 03-23D Pad Sec.3-T1S-R68W  
Well: Larkridge MA03-16D  
Wellbore: Wellbore #1  
Design: Wellbore #1

Local Co-ordinate Reference: Well Larkridge MA03-16D  
TVD Reference: WELL @ 5180.0ft (Original Well Elev)  
MD Reference: WELL @ 5180.0ft (Original Well Elev)  
North Reference: True  
Survey Calculation Method: Minimum Curvature  
Database: EDM den0-adp01 Server Data

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
1,071.0	17.40	192.70	1,056.3	-136.2	-45.4	143.5	1.18	0.95	2.38
1,267.0	17.40	194.20	1,243.3	-193.2	-59.0	202.0	0.23	0.00	0.77
1,361.0	15.00	196.20	1,333.6	-218.5	-65.9	228.2	2.62	-2.55	2.13
1,455.0	14.70	197.50	1,424.5	-241.6	-72.9	252.3	0.48	-0.32	1.38
1,549.0	16.80	200.60	1,514.9	-265.7	-81.2	277.8	2.41	2.23	3.30
1,643.0	17.60	199.20	1,604.7	-291.8	-90.7	305.6	0.96	0.85	-1.49
1,737.0	17.10	201.80	1,694.5	-318.1	-100.5	333.5	0.98	-0.53	2.77
1,831.0	17.40	199.60	1,784.2	-344.1	-110.3	361.4	0.76	0.32	-2.34
1,925.0	16.10	197.10	1,874.2	-369.8	-118.9	388.4	1.58	-1.38	-2.66
2,020.0	16.50	198.60	1,965.4	-395.2	-127.1	415.1	0.61	0.42	1.58
2,114.0	15.20	197.10	2,055.8	-419.6	-134.9	440.8	1.45	-1.38	-1.60
2,208.0	14.50	198.90	2,146.7	-442.6	-142.4	464.9	0.89	-0.74	1.91
2,302.0	16.20	197.70	2,237.3	-466.2	-150.2	489.7	1.84	1.81	-1.28
2,396.0	16.00	197.40	2,327.7	-491.0	-158.0	515.8	0.23	-0.21	-0.32
2,490.0	17.50	201.30	2,417.7	-516.6	-167.0	542.8	1.99	1.60	4.15
2,584.0	17.10	199.50	2,507.4	-542.8	-176.8	570.7	0.71	-0.43	-1.91
2,678.0	17.80	197.40	2,597.1	-569.5	-185.7	598.9	1.00	0.74	-2.23
2,773.0	18.70	198.80	2,687.3	-597.8	-194.9	628.7	1.05	0.95	1.47
2,867.0	16.70	194.50	2,776.9	-625.1	-203.2	657.2	2.54	-2.13	-4.57
2,961.0	16.20	195.70	2,867.0	-650.8	-210.1	683.8	0.64	-0.53	1.28
3,055.0	15.90	203.80	2,957.4	-675.2	-218.9	709.7	2.40	-0.32	8.62
3,149.0	16.50	204.40	3,047.6	-699.2	-229.6	735.8	0.66	0.64	0.64
3,243.0	17.70	197.50	3,137.5	-725.0	-239.4	763.3	2.51	1.28	-7.34
3,337.0	16.80	195.50	3,227.3	-751.7	-247.3	791.2	1.15	-0.96	-2.13
3,431.0	16.60	200.90	3,317.3	-777.3	-255.7	818.1	1.66	-0.21	5.74
3,525.0	18.50	204.60	3,406.9	-803.4	-266.7	846.3	2.34	2.02	3.94
3,619.0	16.90	196.50	3,496.5	-830.1	-276.8	874.8	3.12	-1.70	-8.62
3,713.0	18.30	192.70	3,586.1	-857.6	-283.9	903.2	1.93	1.49	-4.04
3,807.0	17.50	194.80	3,675.5	-885.6	-290.8	932.0	1.09	-0.85	2.23
3,901.0	17.30	189.70	3,765.2	-913.1	-296.8	960.0	1.64	-0.21	-5.43
3,995.0	17.10	198.00	3,855.0	-940.0	-303.4	987.7	2.62	-0.21	8.83
4,089.0	17.30	201.30	3,944.8	-966.2	-312.7	1,015.4	1.06	0.21	3.51
4,183.0	18.00	203.70	4,034.4	-992.5	-323.7	1,043.8	1.07	0.74	2.55
4,277.0	15.00	198.90	4,124.5	-1,017.3	-333.4	1,070.4	3.50	-3.19	-5.11
4,371.0	14.60	198.90	4,215.4	-1,040.0	-341.2	1,094.4	0.43	-0.43	0.00
4,465.0	15.40	196.70	4,306.2	-1,063.2	-348.6	1,118.7	1.04	0.85	-2.34
4,559.0	17.10	198.50	4,396.5	-1,088.3	-356.6	1,145.0	1.89	1.81	1.91
4,653.0	18.70	195.80	4,485.9	-1,115.9	-365.1	1,173.9	1.92	1.70	-2.87
4,747.0	19.50	200.70	4,574.7	-1,145.0	-374.8	1,204.6	1.91	0.85	5.21
4,841.0	20.70	196.10	4,663.0	-1,175.7	-384.9	1,236.9	2.11	1.28	-4.89
4,935.0	17.30	196.00	4,751.9	-1,205.1	-393.4	1,267.5	3.62	-3.62	-0.11
5,029.0	15.80	205.80	4,842.0	-1,230.1	-402.8	1,294.1	3.37	-1.60	10.43
5,123.0	17.50	207.40	4,932.1	-1,254.1	-414.9	1,320.7	1.87	1.81	1.70
5,217.0	20.00	198.90	5,021.1	-1,281.9	-426.6	1,350.6	3.93	2.66	-9.04
5,311.0	19.60	199.00	5,109.5	-1,312.0	-436.9	1,382.5	0.43	-0.43	0.11
5,405.0	16.40	198.80	5,198.9	-1,339.5	-446.3	1,411.5	3.40	-3.40	-0.21
5,499.0	14.40	198.80	5,289.5	-1,363.1	-454.4	1,436.4	2.13	-2.13	0.00
5,593.0	11.70	194.80	5,381.1	-1,383.4	-460.6	1,457.7	3.03	-2.87	-4.26
5,687.0	10.30	194.20	5,473.4	-1,400.8	-465.1	1,475.6	1.49	-1.49	-0.64
5,781.0	8.70	186.00	5,566.1	-1,416.0	-467.9	1,490.9	2.23	-1.70	-8.72
5,875.0	7.30	190.40	5,659.2	-1,428.9	-469.7	1,503.9	1.62	-1.49	4.68
5,969.0	4.10	169.20	5,752.7	-1,438.1	-470.2	1,512.8	4.02	-3.40	-22.55
6,063.0	2.60	166.60	5,846.5	-1,443.5	-469.0	1,517.6	1.60	-1.60	-2.77
6,157.0	2.00	129.10	5,940.5	-1,446.6	-467.3	1,520.0	1.68	-0.64	-39.89

Company: NOBLE ENERGY ADAMS COUNTY CO  
 Project: SEC.3-T1S-R68W  
 Site: Larkridge MA 03-23D Pad Sec.3-T1S-R68W  
 Well: Larkridge MA03-16D  
 Wellbore: Wellbore #1  
 Design: Wellbore #1

Local Co-ordinate Reference: Well Larkridge MA03-16D  
 TVD Reference: WELL @ 5180.0ft (Original Well Elev)  
 MD Reference: WELL @ 5180.0ft (Original Well Elev)  
 North Reference: True  
 Survey Calculation Method: Minimum Curvature  
 Database: EDM den0-adp01 Server Data

## Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,251.0	2.00	6.40	6,034.4	-1,446.0	-465.8	1,519.0	3.73	0.00	-130.53
6,345.0	1.80	2.60	6,128.4	-1,442.9	-465.6	1,516.0	0.25	-0.21	-4.04
6,417.4	1.65	4.47	6,200.8	-1,440.7	-465.4	1,513.9	0.23	-0.21	2.59
<b>TARGET BHL 700'FSL, 770'FEL</b>									
6,439.0	1.60	5.10	6,222.3	-1,440.1	-465.4	1,513.3	0.23	-0.21	2.91
6,533.0	1.40	358.20	6,316.3	-1,437.6	-465.3	1,510.9	0.29	-0.21	-7.34
6,627.0	1.50	1.90	6,410.3	-1,435.3	-465.3	1,508.6	0.15	0.11	3.94
6,721.0	1.50	0.60	6,504.3	-1,432.8	-465.2	1,506.3	0.04	0.00	-1.38
6,815.0	1.50	12.20	6,598.2	-1,430.4	-465.0	1,503.8	0.32	0.00	12.34
6,909.0	1.40	19.70	6,692.2	-1,428.1	-464.3	1,501.5	0.23	-0.11	7.98
7,003.0	1.10	25.60	6,786.2	-1,426.2	-463.5	1,499.4	0.35	-0.32	6.28
7,097.0	1.20	33.30	6,880.1	-1,424.6	-462.6	1,497.6	0.20	0.11	8.19
7,191.0	1.10	52.10	6,974.1	-1,423.2	-461.4	1,495.9	0.41	-0.11	20.00
7,285.0	1.30	58.60	7,068.1	-1,422.1	-459.7	1,494.4	0.26	0.21	6.91
7,379.0	1.70	59.60	7,162.1	-1,420.8	-457.6	1,492.6	0.43	0.43	1.06
7,474.0	1.80	67.80	7,257.0	-1,419.5	-455.0	1,490.6	0.28	0.11	8.63
7,568.0	1.60	58.00	7,351.0	-1,418.3	-452.5	1,488.6	0.37	-0.21	-10.43
7,662.0	1.50	61.90	7,445.0	-1,417.0	-450.3	1,486.8	0.15	-0.11	4.15
7,756.0	1.50	62.90	7,538.9	-1,415.9	-448.2	1,485.0	0.03	0.00	1.06
7,777.2	1.50	60.58	7,560.1	-1,415.6	-447.7	1,484.7	0.29	-0.02	-10.93
<b>TARGET CIRCLE 700'FSL, 770'FEL</b>									
7,850.0	1.50	52.60	7,632.9	-1,414.6	-446.1	1,483.2	0.29	0.01	-10.96
7,944.0	1.60	53.00	7,726.9	-1,413.0	-444.1	1,481.1	0.11	0.11	0.43
8,038.0	1.80	56.00	7,820.8	-1,411.4	-441.8	1,478.9	0.23	0.21	3.19
8,132.0	1.80	55.20	7,914.8	-1,409.7	-439.4	1,476.6	0.03	0.00	-0.85
8,226.0	1.80	57.20	8,008.7	-1,408.1	-436.9	1,474.3	0.07	0.00	2.13
8,320.0	1.80	56.70	8,102.7	-1,406.5	-434.4	1,472.0	0.02	0.00	-0.53
8,382.0	1.70	56.00	8,164.6	-1,405.4	-432.9	1,470.6	0.16	-0.16	-1.13
<b>LEGAL WINDOW 400' X 400' 647'FSL, 662'FEL</b>									
8,436.0	1.70	56.00	8,218.6	-1,404.5	-431.5	1,469.3	0.00	0.00	0.00

## Wellbore Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
TARGET BHL 700'FS	0.00	0.00	6,200.0	-1,415.1	-441.4	1,239,078.96	3,145,413.27	39° 59' 18.558 N	104° 58' 51.730 W
- actual wellpath misses target center by 35.1ft at 6417.4ft MD (6200.8 TVD, -1440.7 N, -465.4 E)									
- Point									
TARGET CIRCLE 700	0.00	0.00	7,560.0	-1,415.1	-441.4	1,239,078.96	3,145,413.27	39° 59' 18.558 N	104° 58' 51.730 W
- actual wellpath misses target center by 6.3ft at 7777.2ft MD (7560.1 TVD, -1415.6 N, -447.7 E)									
- Circle (radius 75.0)									
LEGAL WINDOW 400	0.00	0.00	8,190.0	-1,468.4	-333.8	1,239,026.30	3,145,521.18	39° 59' 18.031 N	104° 58' 50.348 W
- actual wellpath misses target center by 120.1ft at 8382.0ft MD (8164.6 TVD, -1405.4 N, -432.9 E)									
- Rectangle (sides W400.0 H400.0 D0.0)									

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_