

ENSIGN

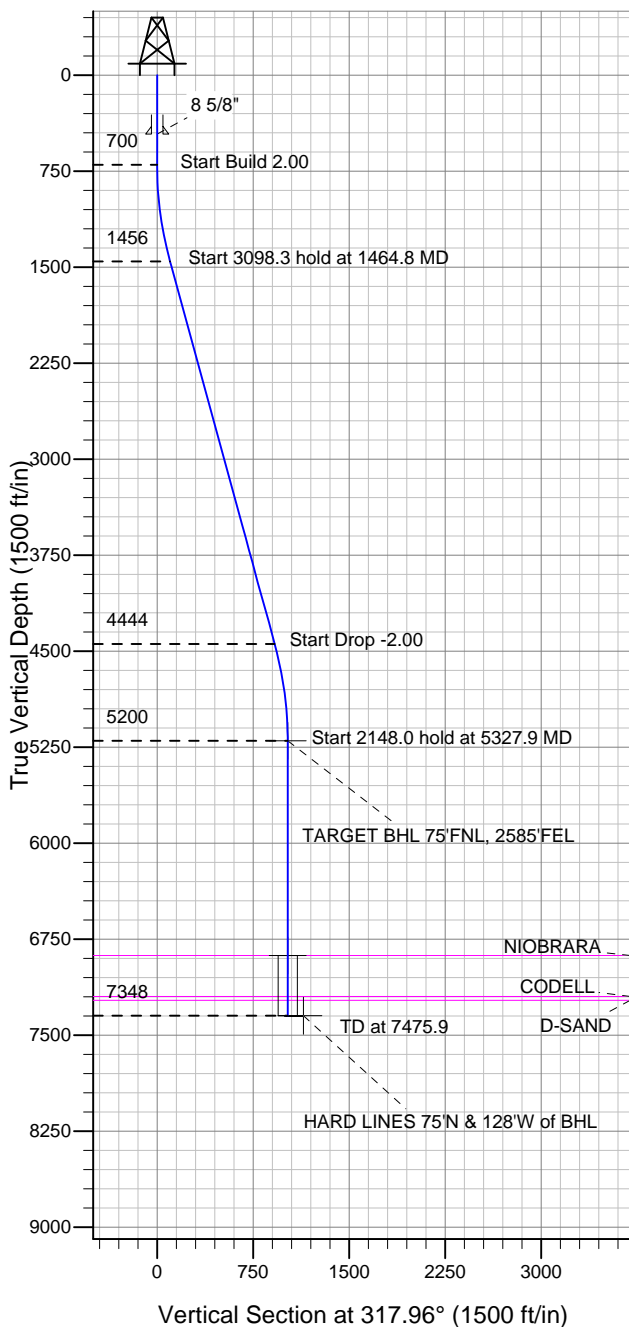
Directional

Well Name: Front Range K17-28D

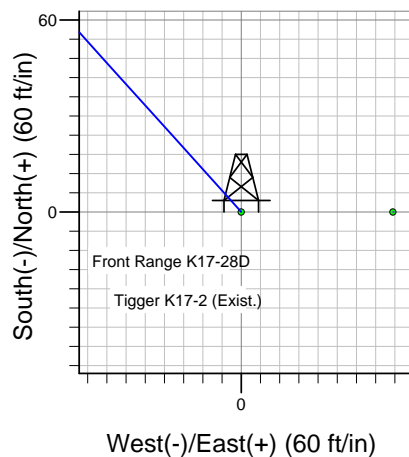
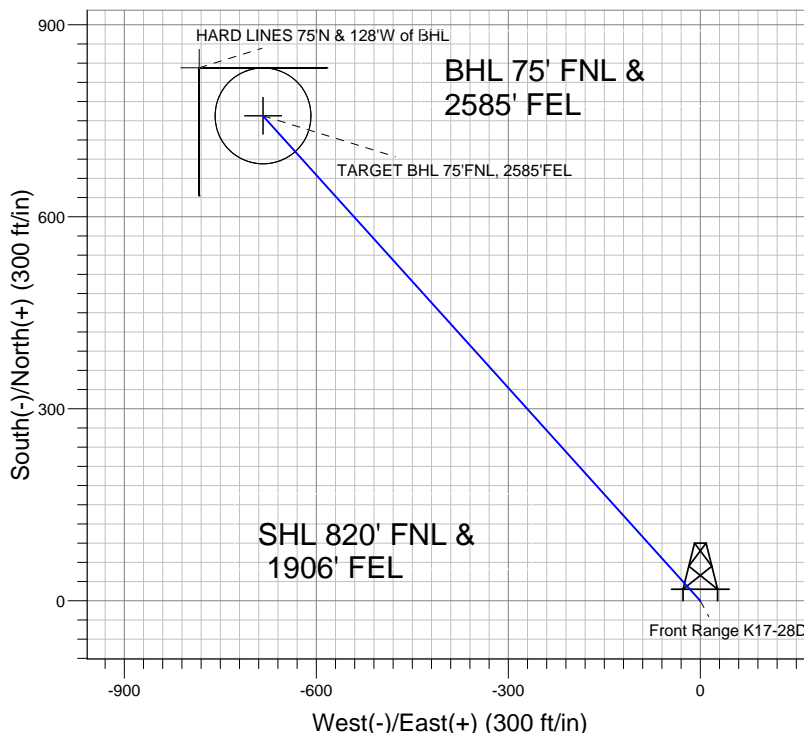
Surface Location: Front Range K17-28D Pad Sec.17-T4N-R66W
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
 Ground Elevation: 4705.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1359006.05	3195534.82	40.316750	-104.798780	

Original Well Elev WELL @ 4718.0ft (Original Well Elev)



NOBLE ENERGY INC WELD COUNTY CO



Front Range K17-28D Pad Sec.17-T4N-R66W
 Front Range K17-28D
 Noble Front Range K17-28D Plan #3 (8-08-11)
 14:18, August 08 2011



Azimuths to True North
 Magnetic North: 8.86°

Magnetic Field
 Strength: 53076.4snT
 Dip Angle: 66.97°
 Date: 7/15/2011
 Model: IGRF2010

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 75'FNL, 2585'FEL	5200.0	757.8	-683.2	40.318830	-104.801230	Point
TARGET CIRCLE 75'FNL & 2600'FWL	6878.0	757.8	-683.2	40.318830	-104.801230	Circle (Radius: 75.0)
HARD LINES 75'N & 128'W of BHL	7348.0	832.8	-783.2	40.319036	-104.801589	Polygon

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	700.0	0.00	0.00	700.0	0.0	0.0	0.00	0.00	0.0	
3	1464.8	15.30	317.96	1455.7	75.4	-68.0	2.00	317.96	101.5	
4	4563.1	15.30	317.96	4444.3	682.4	-615.2	0.00	0.00	918.8	
5	5327.9	0.00	0.00	5200.0	757.8	-683.2	2.00	180.00	1020.3	TARGET BHL 75'FNL, 2585'FEL
6	7475.9	0.00	0.00	7348.0	757.8	-683.2	0.00	0.00	1020.3	



Directional

NOBLE ENERGY INC WELD COUNTY CO

SEC.17-T4N-R66W

Front Range K17-28D Pad Sec.17-T4N-R66W

Front Range K17-28D

Wellbore #1

Plan: Noble Front Range K17-28D Plan #3 (8-08-11)

Standard Planning Report

08 August, 2011



Database:	Landmark	Local Co-ordinate Reference:	Well Front Range K17-28D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4718.0ft (Original Well Elev)
Project:	SEC.17-T4N-R66W	MD Reference:	WELL @ 4718.0ft (Original Well Elev)
Site:	Front Range K17-28D Pad Sec.17-T4N-R66W	North Reference:	True
Well:	Front Range K17-28D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Front Range K17-28D Plan #3 (8-08-11)		

Project	SEC.17-T4N-R66W, Weld 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						Front Range K17-28D Pad Sec.17-T4N-R66W											
Site Position:						Northing:			1,359,006.07 ft			Latitude:			40.316750		
From:			Lat/Long			Easting:			3,195,534.82 ft			Longitude:			-104.798780		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.45 °		

Well	Front Range K17-28D					
Well Position	+N/-S	0.0 ft	Northing:	1,359,006.05 ft	Latitude:	40.316750
	+E/-W	0.0 ft	Easting:	3,195,534.82 ft	Longitude:	-104.798780
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,705.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/15/2011	8.86	66.98	53,076

Design	Noble Front Range K17-28D Plan #3 (8-08-11)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	317.96

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,464.8	15.30	317.96	1,455.7	75.4	-68.0	2.00	2.00	0.00	317.96	
4,563.1	15.30	317.96	4,444.3	682.4	-615.2	0.00	0.00	0.00	0.00	
5,327.9	0.00	0.00	5,200.0	757.8	-683.2	2.00	-2.00	0.00	180.00	TARGET BHL 75'FI
7,475.9	0.00	0.00	7,348.0	757.8	-683.2	0.00	0.00	0.00	0.00	

Database:	Landmark	Local Co-ordinate Reference:	Well Front Range K17-28D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4718.0ft (Original Well Elev)
Project:	SEC.17-T4N-R66W	MD Reference:	WELL @ 4718.0ft (Original Well Elev)
Site:	Front Range K17-28D Pad Sec.17-T4N-R66W	North Reference:	True
Well:	Front Range K17-28D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Front Range K17-28D Plan #3 (8-08-11)		

Planned 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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
40.0	0.00	0.00	40.0	0.0	0.0	0.0	0.00	0.00	0.00
80.0	0.00	0.00	80.0	0.0	0.0	0.0	0.00	0.00	0.00
120.0	0.00	0.00	120.0	0.0	0.0	0.0	0.00	0.00	0.00
160.0	0.00	0.00	160.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
240.0	0.00	0.00	240.0	0.0	0.0	0.0	0.00	0.00	0.00
280.0	0.00	0.00	280.0	0.0	0.0	0.0	0.00	0.00	0.00
320.0	0.00	0.00	320.0	0.0	0.0	0.0	0.00	0.00	0.00
360.0	0.00	0.00	360.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
440.0	0.00	0.00	440.0	0.0	0.0	0.0	0.00	0.00	0.00
460.0	0.00	0.00	460.0	0.0	0.0	0.0	0.00	0.00	0.00
8 5/8"									
480.0	0.00	0.00	480.0	0.0	0.0	0.0	0.00	0.00	0.00
520.0	0.00	0.00	520.0	0.0	0.0	0.0	0.00	0.00	0.00
560.0	0.00	0.00	560.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
640.0	0.00	0.00	640.0	0.0	0.0	0.0	0.00	0.00	0.00
680.0	0.00	0.00	680.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
720.0	0.40	317.96	720.0	0.1	0.0	0.1	2.00	2.00	0.00
760.0	1.20	317.96	760.0	0.5	-0.4	0.6	2.00	2.00	0.00
800.0	2.00	317.96	800.0	1.3	-1.2	1.7	2.00	2.00	0.00
840.0	2.80	317.96	839.9	2.5	-2.3	3.4	2.00	2.00	0.00
880.0	3.60	317.96	879.9	4.2	-3.8	5.7	2.00	2.00	0.00
920.0	4.40	317.96	919.8	6.3	-5.7	8.4	2.00	2.00	0.00
960.0	5.20	317.96	959.6	8.8	-7.9	11.8	2.00	2.00	0.00
1,000.0	6.00	317.96	999.5	11.7	-10.5	15.7	2.00	2.00	0.00
1,040.0	6.80	317.96	1,039.2	15.0	-13.5	20.2	2.00	2.00	0.00
1,080.0	7.60	317.96	1,078.9	18.7	-16.9	25.2	2.00	2.00	0.00
1,120.0	8.40	317.96	1,118.5	22.8	-20.6	30.7	2.00	2.00	0.00
1,160.0	9.20	317.96	1,158.0	27.4	-24.7	36.9	2.00	2.00	0.00
1,200.0	10.00	317.96	1,197.5	32.3	-29.1	43.5	2.00	2.00	0.00
1,240.0	10.80	317.96	1,236.8	37.7	-34.0	50.7	2.00	2.00	0.00
1,280.0	11.60	317.96	1,276.0	43.5	-39.2	58.5	2.00	2.00	0.00
1,320.0	12.40	317.96	1,315.2	49.6	-44.7	66.8	2.00	2.00	0.00
1,360.0	13.20	317.96	1,354.2	56.2	-50.7	75.7	2.00	2.00	0.00
1,400.0	14.00	317.96	1,393.1	63.2	-57.0	85.1	2.00	2.00	0.00
1,440.0	14.80	317.96	1,431.8	70.6	-63.6	95.0	2.00	2.00	0.00
1,464.8	15.30	317.96	1,455.7	75.4	-68.0	101.5	2.00	2.00	0.00
1,480.0	15.30	317.96	1,470.4	78.4	-70.6	105.5	0.00	0.00	0.00
1,520.0	15.30	317.96	1,509.0	86.2	-77.7	116.0	0.00	0.00	0.00
1,560.0	15.30	317.96	1,547.6	94.0	-84.8	126.6	0.00	0.00	0.00
1,600.0	15.30	317.96	1,586.2	101.9	-91.8	137.1	0.00	0.00	0.00
1,640.0	15.30	317.96	1,624.7	109.7	-98.9	147.7	0.00	0.00	0.00
1,680.0	15.30	317.96	1,663.3	117.5	-106.0	158.3	0.00	0.00	0.00
1,720.0	15.30	317.96	1,701.9	125.4	-113.0	168.8	0.00	0.00	0.00
1,760.0	15.30	317.96	1,740.5	133.2	-120.1	179.4	0.00	0.00	0.00
1,800.0	15.30	317.96	1,779.1	141.0	-127.2	189.9	0.00	0.00	0.00
1,840.0	15.30	317.96	1,817.7	148.9	-134.2	200.5	0.00	0.00	0.00
1,880.0	15.30	317.96	1,856.2	156.7	-141.3	211.0	0.00	0.00	0.00
1,920.0	15.30	317.96	1,894.8	164.6	-148.4	221.6	0.00	0.00	0.00
1,960.0	15.30	317.96	1,933.4	172.4	-155.4	232.1	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Front Range K17-28D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4718.0ft (Original Well Elev)
Project:	SEC.17-T4N-R66W	MD Reference:	WELL @ 4718.0ft (Original Well Elev)
Site:	Front Range K17-28D Pad Sec.17-T4N-R66W	North Reference:	True
Well:	Front Range K17-28D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Front Range K17-28D Plan #3 (8-08-11)		

Planned 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)
2,000.0	15.30	317.96	1,972.0	180.2	-162.5	242.7	0.00	0.00	0.00
2,040.0	15.30	317.96	2,010.6	188.1	-169.6	253.2	0.00	0.00	0.00
2,080.0	15.30	317.96	2,049.2	195.9	-176.6	263.8	0.00	0.00	0.00
2,120.0	15.30	317.96	2,087.7	203.7	-183.7	274.3	0.00	0.00	0.00
2,160.0	15.30	317.96	2,126.3	211.6	-190.8	284.9	0.00	0.00	0.00
2,200.0	15.30	317.96	2,164.9	219.4	-197.8	295.4	0.00	0.00	0.00
2,240.0	15.30	317.96	2,203.5	227.3	-204.9	306.0	0.00	0.00	0.00
2,280.0	15.30	317.96	2,242.1	235.1	-212.0	316.5	0.00	0.00	0.00
2,320.0	15.30	317.96	2,280.7	242.9	-219.0	327.1	0.00	0.00	0.00
2,360.0	15.30	317.96	2,319.2	250.8	-226.1	337.6	0.00	0.00	0.00
2,400.0	15.30	317.96	2,357.8	258.6	-233.2	348.2	0.00	0.00	0.00
2,440.0	15.30	317.96	2,396.4	266.4	-240.2	358.7	0.00	0.00	0.00
2,480.0	15.30	317.96	2,435.0	274.3	-247.3	369.3	0.00	0.00	0.00
2,520.0	15.30	317.96	2,473.6	282.1	-254.3	379.8	0.00	0.00	0.00
2,560.0	15.30	317.96	2,512.2	290.0	-261.4	390.4	0.00	0.00	0.00
2,600.0	15.30	317.96	2,550.7	297.8	-268.5	401.0	0.00	0.00	0.00
2,640.0	15.30	317.96	2,589.3	305.6	-275.5	411.5	0.00	0.00	0.00
2,680.0	15.30	317.96	2,627.9	313.5	-282.6	422.1	0.00	0.00	0.00
2,720.0	15.30	317.96	2,666.5	321.3	-289.7	432.6	0.00	0.00	0.00
2,760.0	15.30	317.96	2,705.1	329.1	-296.7	443.2	0.00	0.00	0.00
2,800.0	15.30	317.96	2,743.7	337.0	-303.8	453.7	0.00	0.00	0.00
2,840.0	15.30	317.96	2,782.2	344.8	-310.9	464.3	0.00	0.00	0.00
2,880.0	15.30	317.96	2,820.8	352.7	-317.9	474.8	0.00	0.00	0.00
2,920.0	15.30	317.96	2,859.4	360.5	-325.0	485.4	0.00	0.00	0.00
2,960.0	15.30	317.96	2,898.0	368.3	-332.1	495.9	0.00	0.00	0.00
3,000.0	15.30	317.96	2,936.6	376.2	-339.1	506.5	0.00	0.00	0.00
3,040.0	15.30	317.96	2,975.1	384.0	-346.2	517.0	0.00	0.00	0.00
3,080.0	15.30	317.96	3,013.7	391.8	-353.3	527.6	0.00	0.00	0.00
3,120.0	15.30	317.96	3,052.3	399.7	-360.3	538.1	0.00	0.00	0.00
3,160.0	15.30	317.96	3,090.9	407.5	-367.4	548.7	0.00	0.00	0.00
3,200.0	15.30	317.96	3,129.5	415.4	-374.5	559.2	0.00	0.00	0.00
3,240.0	15.30	317.96	3,168.1	423.2	-381.5	569.8	0.00	0.00	0.00
3,280.0	15.30	317.96	3,206.6	431.0	-388.6	580.3	0.00	0.00	0.00
3,320.0	15.30	317.96	3,245.2	438.9	-395.7	590.9	0.00	0.00	0.00
3,360.0	15.30	317.96	3,283.8	446.7	-402.7	601.4	0.00	0.00	0.00
3,400.0	15.30	317.96	3,322.4	454.5	-409.8	612.0	0.00	0.00	0.00
3,440.0	15.30	317.96	3,361.0	462.4	-416.9	622.5	0.00	0.00	0.00
3,480.0	15.30	317.96	3,399.6	470.2	-423.9	633.1	0.00	0.00	0.00
3,520.0	15.30	317.96	3,438.1	478.0	-431.0	643.7	0.00	0.00	0.00
3,560.0	15.30	317.96	3,476.7	485.9	-438.1	654.2	0.00	0.00	0.00
3,600.0	15.30	317.96	3,515.3	493.7	-445.1	664.8	0.00	0.00	0.00
3,640.0	15.30	317.96	3,553.9	501.6	-452.2	675.3	0.00	0.00	0.00
3,680.0	15.30	317.96	3,592.5	509.4	-459.3	685.9	0.00	0.00	0.00
3,720.0	15.30	317.96	3,631.1	517.2	-466.3	696.4	0.00	0.00	0.00
3,760.0	15.30	317.96	3,669.6	525.1	-473.4	707.0	0.00	0.00	0.00
3,800.0	15.30	317.96	3,708.2	532.9	-480.5	717.5	0.00	0.00	0.00
3,840.0	15.30	317.96	3,746.8	540.7	-487.5	728.1	0.00	0.00	0.00
3,880.0	15.30	317.96	3,785.4	548.6	-494.6	738.6	0.00	0.00	0.00
3,920.0	15.30	317.96	3,824.0	556.4	-501.7	749.2	0.00	0.00	0.00
3,960.0	15.30	317.96	3,862.6	564.3	-508.7	759.7	0.00	0.00	0.00
4,000.0	15.30	317.96	3,901.1	572.1	-515.8	770.3	0.00	0.00	0.00
4,040.0	15.30	317.96	3,939.7	579.9	-522.8	780.8	0.00	0.00	0.00
4,080.0	15.30	317.96	3,978.3	587.8	-529.9	791.4	0.00	0.00	0.00
4,120.0	15.30	317.96	4,016.9	595.6	-537.0	801.9	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Front Range K17-28D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4718.0ft (Original Well Elev)
Project:	SEC.17-T4N-R66W	MD Reference:	WELL @ 4718.0ft (Original Well Elev)
Site:	Front Range K17-28D Pad Sec.17-T4N-R66W	North Reference:	True
Well:	Front Range K17-28D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Front Range K17-28D Plan #3 (8-08-11)		

Planned 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)
4,160.0	15.30	317.96	4,055.5	603.4	-544.0	812.5	0.00	0.00	0.00
4,200.0	15.30	317.96	4,094.1	611.3	-551.1	823.0	0.00	0.00	0.00
4,240.0	15.30	317.96	4,132.6	619.1	-558.2	833.6	0.00	0.00	0.00
4,280.0	15.30	317.96	4,171.2	627.0	-565.2	844.1	0.00	0.00	0.00
4,320.0	15.30	317.96	4,209.8	634.8	-572.3	854.7	0.00	0.00	0.00
4,360.0	15.30	317.96	4,248.4	642.6	-579.4	865.2	0.00	0.00	0.00
4,400.0	15.30	317.96	4,287.0	650.5	-586.4	875.8	0.00	0.00	0.00
4,440.0	15.30	317.96	4,325.6	658.3	-593.5	886.4	0.00	0.00	0.00
4,480.0	15.30	317.96	4,364.1	666.1	-600.6	896.9	0.00	0.00	0.00
4,520.0	15.30	317.96	4,402.7	674.0	-607.6	907.5	0.00	0.00	0.00
4,560.0	15.30	317.96	4,441.3	681.8	-614.7	918.0	0.00	0.00	0.00
4,563.1	15.30	317.96	4,444.3	682.4	-615.2	918.8	0.00	0.00	0.00
4,600.0	14.56	317.96	4,479.9	689.5	-621.6	928.3	2.00	-2.00	0.00
4,640.0	13.76	317.96	4,518.7	696.7	-628.2	938.1	2.00	-2.00	0.00
4,680.0	12.96	317.96	4,557.7	703.6	-634.4	947.4	2.00	-2.00	0.00
4,720.0	12.16	317.96	4,596.7	710.1	-640.2	956.0	2.00	-2.00	0.00
4,760.0	11.36	317.96	4,635.9	716.1	-645.6	964.2	2.00	-2.00	0.00
4,800.0	10.56	317.96	4,675.1	721.8	-650.7	971.8	2.00	-2.00	0.00
4,840.0	9.76	317.96	4,714.5	727.0	-655.4	978.9	2.00	-2.00	0.00
4,880.0	8.96	317.96	4,754.0	731.8	-659.8	985.4	2.00	-2.00	0.00
4,920.0	8.16	317.96	4,793.5	736.3	-663.8	991.3	2.00	-2.00	0.00
4,960.0	7.36	317.96	4,833.2	740.3	-667.4	996.7	2.00	-2.00	0.00
5,000.0	6.56	317.96	4,872.9	743.9	-670.6	1,001.6	2.00	-2.00	0.00
5,040.0	5.76	317.96	4,912.6	747.1	-673.5	1,005.8	2.00	-2.00	0.00
5,080.0	4.96	317.96	4,952.5	749.8	-676.0	1,009.6	2.00	-2.00	0.00
5,120.0	4.16	317.96	4,992.3	752.2	-678.2	1,012.8	2.00	-2.00	0.00
5,160.0	3.36	317.96	5,032.2	754.1	-679.9	1,015.4	2.00	-2.00	0.00
5,200.0	2.56	317.96	5,072.2	755.7	-681.3	1,017.4	2.00	-2.00	0.00
5,240.0	1.76	317.96	5,112.2	756.8	-682.3	1,018.9	2.00	-2.00	0.00
5,280.0	0.96	317.96	5,152.1	757.5	-682.9	1,019.9	2.00	-2.00	0.00
5,320.0	0.16	317.96	5,192.1	757.8	-683.2	1,020.3	2.00	-2.00	0.00
5,327.9	0.00	0.00	5,200.0	757.8	-683.2	1,020.3	2.00	-2.00	0.00
5,360.0	0.00	0.00	5,232.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
5,400.0	0.00	0.00	5,272.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
5,440.0	0.00	0.00	5,312.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
5,480.0	0.00	0.00	5,352.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
5,520.0	0.00	0.00	5,392.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
5,560.0	0.00	0.00	5,432.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
5,600.0	0.00	0.00	5,472.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
5,640.0	0.00	0.00	5,512.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
5,680.0	0.00	0.00	5,552.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
5,720.0	0.00	0.00	5,592.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
5,760.0	0.00	0.00	5,632.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
5,800.0	0.00	0.00	5,672.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
5,840.0	0.00	0.00	5,712.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
5,880.0	0.00	0.00	5,752.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
5,920.0	0.00	0.00	5,792.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
5,960.0	0.00	0.00	5,832.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
6,000.0	0.00	0.00	5,872.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
6,040.0	0.00	0.00	5,912.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
6,080.0	0.00	0.00	5,952.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
6,120.0	0.00	0.00	5,992.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
6,160.0	0.00	0.00	6,032.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
6,200.0	0.00	0.00	6,072.1	757.8	-683.2	1,020.3	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Front Range K17-28D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4718.0ft (Original Well Elev)
Project:	SEC.17-T4N-R66W	MD Reference:	WELL @ 4718.0ft (Original Well Elev)
Site:	Front Range K17-28D Pad Sec.17-T4N-R66W	North Reference:	True
Well:	Front Range K17-28D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Front Range K17-28D Plan #3 (8-08-11)		

Planned 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)
6,240.0	0.00	0.00	6,112.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
6,280.0	0.00	0.00	6,152.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
6,320.0	0.00	0.00	6,192.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
6,360.0	0.00	0.00	6,232.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
6,400.0	0.00	0.00	6,272.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
6,440.0	0.00	0.00	6,312.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
6,480.0	0.00	0.00	6,352.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
6,520.0	0.00	0.00	6,392.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
6,560.0	0.00	0.00	6,432.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
6,600.0	0.00	0.00	6,472.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
6,640.0	0.00	0.00	6,512.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
6,680.0	0.00	0.00	6,552.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
6,720.0	0.00	0.00	6,592.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
6,760.0	0.00	0.00	6,632.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
6,800.0	0.00	0.00	6,672.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
6,840.0	0.00	0.00	6,712.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
6,880.0	0.00	0.00	6,752.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
6,920.0	0.00	0.00	6,792.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
6,960.0	0.00	0.00	6,832.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
7,000.0	0.00	0.00	6,872.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
7,005.9	0.00	0.00	6,878.0	757.8	-683.2	1,020.3	0.00	0.00	0.00
NIOBRARA									
7,040.0	0.00	0.00	6,912.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
7,080.0	0.00	0.00	6,952.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
7,120.0	0.00	0.00	6,992.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
7,160.0	0.00	0.00	7,032.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
7,200.0	0.00	0.00	7,072.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
7,240.0	0.00	0.00	7,112.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
7,280.0	0.00	0.00	7,152.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
7,320.0	0.00	0.00	7,192.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
7,325.9	0.00	0.00	7,198.0	757.8	-683.2	1,020.3	0.00	0.00	0.00
CODELL									
7,355.9	0.00	0.00	7,228.0	757.8	-683.2	1,020.3	0.00	0.00	0.00
D-SAND									
7,360.0	0.00	0.00	7,232.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
7,400.0	0.00	0.00	7,272.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
7,440.0	0.00	0.00	7,312.1	757.8	-683.2	1,020.3	0.00	0.00	0.00
7,475.9	0.00	0.00	7,348.0	757.8	-683.2	1,020.3	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Front Range K17-28D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4718.0ft (Original Well Elev)
Project:	SEC.17-T4N-R66W	MD Reference:	WELL @ 4718.0ft (Original Well Elev)
Site:	Front Range K17-28D Pad Sec.17-T4N-R66W	North Reference:	True
Well:	Front Range K17-28D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Front Range K17-28D Plan #3 (8-08-11)		

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
TARGET BHL 75'FNL	0.00	0.00	5,200.0	757.8	-683.2	1,359,758.38	3,194,845.68	40.318830	-104.801230
- plan hits target center									
- Point									
HARD LINES 75'N & .	0.00	0.00	7,348.0	832.8	-783.2	1,359,832.59	3,194,745.09	40.319036	-104.801589
- plan misses target center by 125.0ft at 7475.9ft MD (7348.0 TVD, 757.8 N, -683.2 E)									
- Polygon									
Point 1			7,348.0	0.0	0.0	1,359,832.59	3,194,745.09		
Point 2			7,348.0	-200.0	0.0	1,359,632.61	3,194,746.67		
Point 3			7,348.0	0.0	0.0	1,359,832.59	3,194,745.09		
Point 4			7,348.0	0.0	200.0	1,359,834.17	3,194,945.08		
TARGET CIRCLE 75'	0.00	0.00	6,878.0	757.8	-683.2	1,359,758.38	3,194,845.68	40.318830	-104.801230
- plan hits target center									
- Circle (radius 75.0)									

Casing Points					
	Measured Depth	Vertical Depth		Casing Diameter	Hole Diameter
	(ft)	(ft)	Name	(")	(")
	460.0	460.0	8 5/8"	8-5/8	12-1/4

Formations						
	Measured Depth	Vertical Depth			Dip	Dip Direction
	(ft)	(ft)	Name	Lithology	(°)	(°)
	7,005.9	6,878.0	NIOBRARA		0.00	
	7,325.9	7,198.0	CODELL		0.00	
	7,355.9	7,228.0	D-SAND		0.00	