

# ENSIGN

## Directional

### Well Name: Croissant USX 11-17D

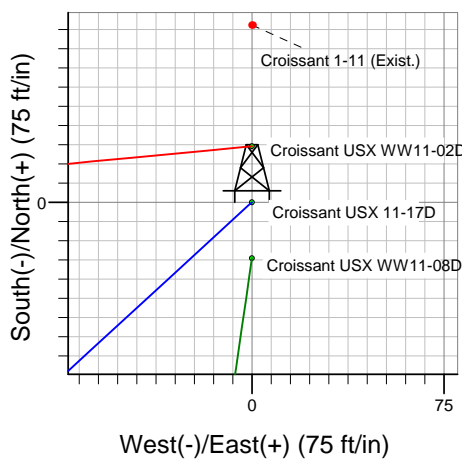
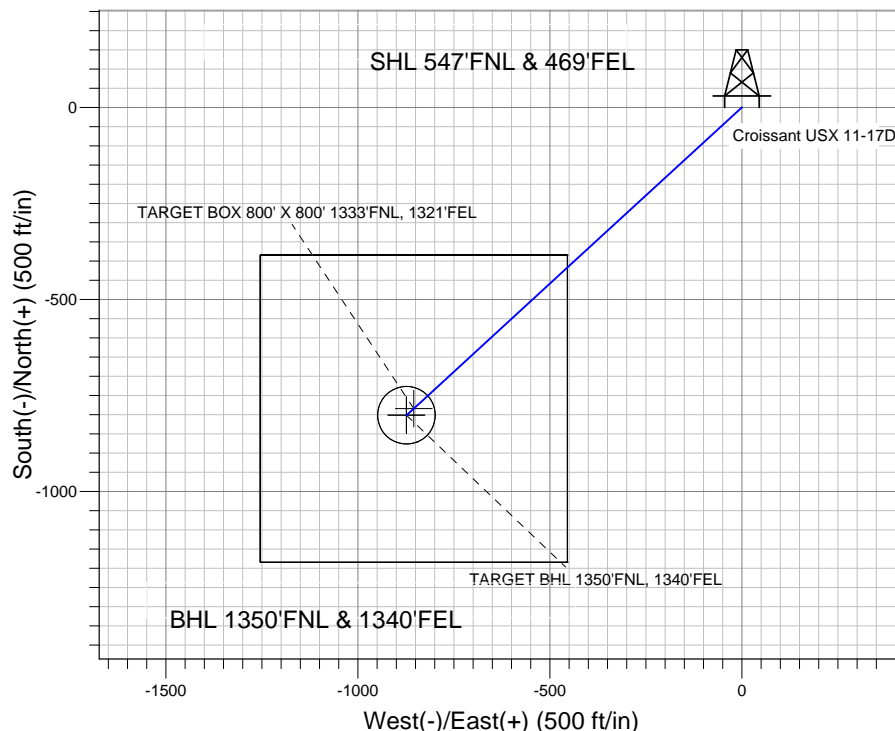
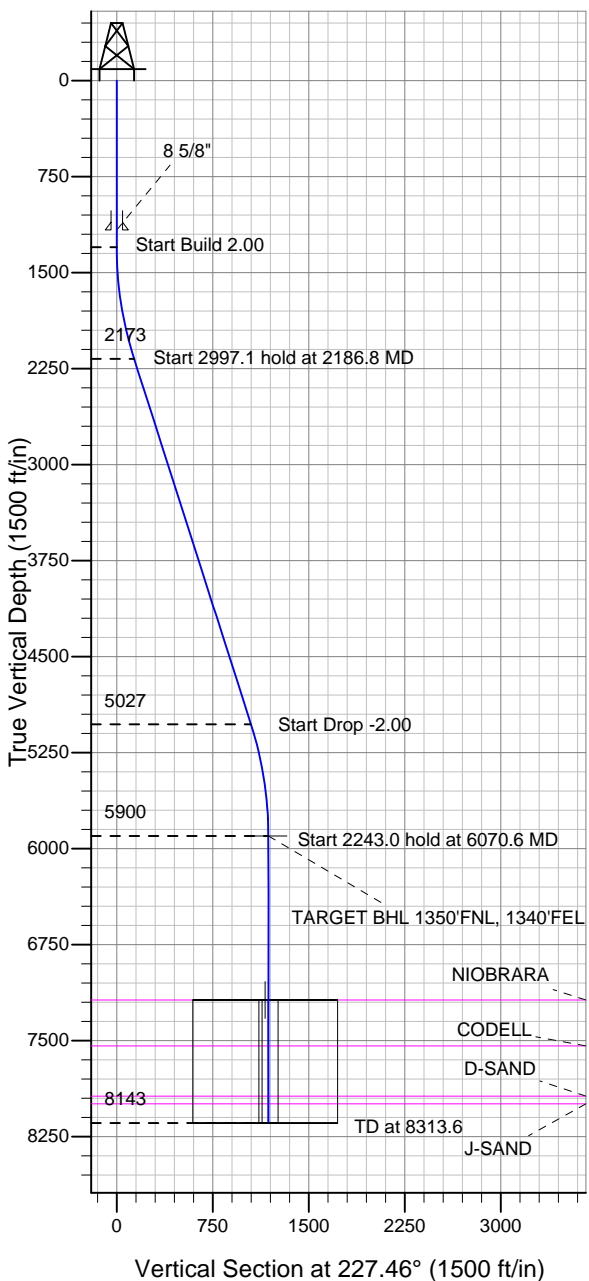
Surface Location: Croissant USX WW11-02D Pad Sec.11-T1N-R66W  
North American Datum 1983 US State Plane 1983 Wyoming Western Zone

Ground Elevation: 5076.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	217070.87	4121357.31	40.071650	-104.736530	

Original Well Elev WELL @ 5089.0ft (Original Well Elev)

## NOBLE ENERGY INC WELD COUNTY CO



Croissant USX WW11-02D Pad Sec.11-T1N-R66W  
Croissant USX 11-17D  
Noble Croissant USX WW11-17D Plan #1 (7-05-11)  
9:12, July 06 2011



Azimuths to True North  
Magnetic North: 8.81°

Magnetic Field  
Strength: 52953.8snT  
Dip Angle: 66.79°  
Date: 7/5/2011  
Model: IGRF2010

### WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 1350'FNL, 1340'FEL	5900.0	-801.4	-873.3	40.069450	-104.739650	Point
TARGET BOX 800' X 800' 1333'FNL, 1321'FEL	7181.0	-784.4	-854.3	40.069497	-104.739582	Rectangle (Sides: L800.0 W800.0)
TARGET CIRCLE 1350'FNL, 1340'FEL	7181.0	-801.4	-873.3	40.069450	-104.739650	Circle (Radius: 75.0)

### 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	1300.0	0.00	0.00	1300.0	0.0	0.0	0.00	0.00	0.0	
3	2186.8	17.74	227.46	2172.7	-92.1	-100.3	2.00	227.46	136.2	
4	5183.9	17.74	227.46	5027.3	-709.4	-773.0	0.00	0.00	1049.1	
5	6070.6	0.00	0.00	5900.0	-801.4	-873.3	2.00	180.00	1185.3	TARGET BHL 1350'FNL, 1340'FEL
6	8313.6	0.00	0.00	8143.0	-801.4	-873.3	0.00	0.00	1185.3	



## **Directional**

### **NOBLE ENERGY INC WELD COUNTY CO**

**SEC.11-T1N-R66W**

**Croissant USX WW11-02D Pad Sec.11-T1N-R66W**

**Croissant USX 11-17D**

**Wellbore #1**

**Plan: Noble Croissant USX WW11-17D Plan #1 (7-05-11)**

### **Standard Planning Report**

**06 July, 2011**



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Croissant USX 11-17D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 5089.0ft (Original Well Elev)
<b>Project:</b>	SEC.11-T1N-R66W	<b>MD Reference:</b>	WELL @ 5089.0ft (Original Well Elev)
<b>Site:</b>	Croissant USX WW11-02D Pad Sec.11-T1N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Croissant USX 11-17D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Croissant USX WW11-17D Plan #1 (7-05-11)		

<b>Project</b>	SEC.11-T1N-R66W, Weld County, Colorado		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Wyoming Western Zone		Using geodetic scale factor

Site						Croissant USX WW11-02D Pad Sec.11-T1N-R66W											
Site Position:						Northing:			217,092.74 ft			Latitude:			40.071710		
From:			Lat/Long			Easting:			4,121,355.93 ft			Longitude:			-104.736530		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			3.45 °		

Well	Croissant USX 11-17D					
Well Position	+N-S	-21.9 ft	Northing:	217,070.87 ft	Latitude:	40.071650
	+E-W	0.1 ft	Easting:	4,121,357.31 ft	Longitude:	-104.736530
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,076.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	7/5/2011	8.81	66.79	52,954

<b>Design</b>	Noble Croissant USX WW11-17D Plan #1 (7-05-11)			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	227.46

<b>Plan Sections</b>										
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	
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,186.8	17.74	227.46	2,172.7	-92.1	-100.3	2.00	2.00	0.00	227.46	
5,183.9	17.74	227.46	5,027.3	-709.4	-773.0	0.00	0.00	0.00	0.00	
6,070.6	0.00	0.00	5,900.0	-801.4	-873.3	2.00	-2.00	0.00	180.00	TARGET BHL 135C
8,313.6	0.00	0.00	8,143.0	-801.4	-873.3	0.00	0.00	0.00	0.00	

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Croissant USX 11-17D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 5089.0ft (Original Well Elev)
<b>Project:</b>	SEC.11-T1N-R66W	<b>MD Reference:</b>	WELL @ 5089.0ft (Original Well Elev)
<b>Site:</b>	Croissant USX WW11-02D Pad Sec.11-T1N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Croissant USX 11-17D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Croissant USX WW11-17D Plan #1 (7-01)		

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
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
720.0	0.00	0.00	720.0	0.0	0.0	0.0	0.00	0.00	0.00
760.0	0.00	0.00	760.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
840.0	0.00	0.00	840.0	0.0	0.0	0.0	0.00	0.00	0.00
880.0	0.00	0.00	880.0	0.0	0.0	0.0	0.00	0.00	0.00
920.0	0.00	0.00	920.0	0.0	0.0	0.0	0.00	0.00	0.00
960.0	0.00	0.00	960.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,040.0	0.00	0.00	1,040.0	0.0	0.0	0.0	0.00	0.00	0.00
1,080.0	0.00	0.00	1,080.0	0.0	0.0	0.0	0.00	0.00	0.00
1,120.0	0.00	0.00	1,120.0	0.0	0.0	0.0	0.00	0.00	0.00
1,160.0	0.00	0.00	1,160.0	0.0	0.0	0.0	0.00	0.00	0.00
1,165.0	0.00	0.00	1,165.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>8 5/8"</b>									
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,240.0	0.00	0.00	1,240.0	0.0	0.0	0.0	0.00	0.00	0.00
1,280.0	0.00	0.00	1,280.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,320.0	0.40	227.46	1,320.0	0.0	-0.1	0.1	2.00	2.00	0.00
1,360.0	1.20	227.46	1,360.0	-0.4	-0.5	0.6	2.00	2.00	0.00
1,400.0	2.00	227.46	1,400.0	-1.2	-1.3	1.7	2.00	2.00	0.00
1,440.0	2.80	227.46	1,439.9	-2.3	-2.5	3.4	2.00	2.00	0.00
1,480.0	3.60	227.46	1,479.9	-3.8	-4.2	5.7	2.00	2.00	0.00
1,520.0	4.40	227.46	1,519.8	-5.7	-6.2	8.4	2.00	2.00	0.00
1,560.0	5.20	227.46	1,559.6	-8.0	-8.7	11.8	2.00	2.00	0.00
1,600.0	6.00	227.46	1,599.5	-10.6	-11.6	15.7	2.00	2.00	0.00
1,640.0	6.80	227.46	1,639.2	-13.6	-14.8	20.2	2.00	2.00	0.00
1,680.0	7.60	227.46	1,678.9	-17.0	-18.5	25.2	2.00	2.00	0.00
1,720.0	8.40	227.46	1,718.5	-20.8	-22.6	30.7	2.00	2.00	0.00
1,760.0	9.20	227.46	1,758.0	-24.9	-27.2	36.9	2.00	2.00	0.00
1,800.0	10.00	227.46	1,797.5	-29.4	-32.1	43.5	2.00	2.00	0.00
1,840.0	10.80	227.46	1,836.8	-34.3	-37.4	50.7	2.00	2.00	0.00
1,880.0	11.60	227.46	1,876.0	-39.6	-43.1	58.5	2.00	2.00	0.00
1,920.0	12.40	227.46	1,915.2	-45.2	-49.2	66.8	2.00	2.00	0.00
1,960.0	13.20	227.46	1,954.2	-51.2	-55.8	75.7	2.00	2.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Croissant USX 11-17D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 5089.0ft (Original Well Elev)
<b>Project:</b>	SEC.11-T1N-R66W	<b>MD Reference:</b>	WELL @ 5089.0ft (Original Well Elev)
<b>Site:</b>	Croissant USX WW11-02D Pad Sec.11-T1N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Croissant USX 11-17D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Croissant USX WW11-17D Plan #1 (7-01)		

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	14.00	227.46	1,993.1	-57.5	-62.7	85.1	2.00	2.00	0.00	
2,040.0	14.80	227.46	2,031.8	-64.3	-70.0	95.0	2.00	2.00	0.00	
2,080.0	15.60	227.46	2,070.4	-71.4	-77.8	105.5	2.00	2.00	0.00	
2,120.0	16.40	227.46	2,108.8	-78.8	-85.9	116.6	2.00	2.00	0.00	
2,160.0	17.20	227.46	2,147.1	-86.6	-94.4	128.1	2.00	2.00	0.00	
2,186.8	17.74	227.46	2,172.7	-92.1	-100.3	136.2	2.00	2.00	0.00	
2,200.0	17.74	227.46	2,185.3	-94.8	-103.3	140.2	0.00	0.00	0.00	
2,240.0	17.74	227.46	2,223.4	-103.0	-112.3	152.4	0.00	0.00	0.00	
2,280.0	17.74	227.46	2,261.5	-111.3	-121.2	164.6	0.00	0.00	0.00	
2,320.0	17.74	227.46	2,299.6	-119.5	-130.2	176.7	0.00	0.00	0.00	
2,360.0	17.74	227.46	2,337.7	-127.7	-139.2	188.9	0.00	0.00	0.00	
2,400.0	17.74	227.46	2,375.8	-136.0	-148.2	201.1	0.00	0.00	0.00	
2,440.0	17.74	227.46	2,413.9	-144.2	-157.1	213.3	0.00	0.00	0.00	
2,480.0	17.74	227.46	2,452.0	-152.5	-166.1	225.5	0.00	0.00	0.00	
2,520.0	17.74	227.46	2,490.1	-160.7	-175.1	237.7	0.00	0.00	0.00	
2,560.0	17.74	227.46	2,528.2	-168.9	-184.1	249.8	0.00	0.00	0.00	
2,600.0	17.74	227.46	2,566.3	-177.2	-193.1	262.0	0.00	0.00	0.00	
2,640.0	17.74	227.46	2,604.4	-185.4	-202.0	274.2	0.00	0.00	0.00	
2,680.0	17.74	227.46	2,642.5	-193.7	-211.0	286.4	0.00	0.00	0.00	
2,720.0	17.74	227.46	2,680.6	-201.9	-220.0	298.6	0.00	0.00	0.00	
2,760.0	17.74	227.46	2,718.7	-210.1	-229.0	310.8	0.00	0.00	0.00	
2,800.0	17.74	227.46	2,756.8	-218.4	-237.9	323.0	0.00	0.00	0.00	
2,840.0	17.74	227.46	2,794.9	-226.6	-246.9	335.1	0.00	0.00	0.00	
2,880.0	17.74	227.46	2,833.0	-234.8	-255.9	347.3	0.00	0.00	0.00	
2,920.0	17.74	227.46	2,871.1	-243.1	-264.9	359.5	0.00	0.00	0.00	
2,960.0	17.74	227.46	2,909.2	-251.3	-273.8	371.7	0.00	0.00	0.00	
3,000.0	17.74	227.46	2,947.3	-259.6	-282.8	383.9	0.00	0.00	0.00	
3,040.0	17.74	227.46	2,985.4	-267.8	-291.8	396.1	0.00	0.00	0.00	
3,080.0	17.74	227.46	3,023.5	-276.0	-300.8	408.3	0.00	0.00	0.00	
3,120.0	17.74	227.46	3,061.6	-284.3	-309.8	420.4	0.00	0.00	0.00	
3,160.0	17.74	227.46	3,099.7	-292.5	-318.7	432.6	0.00	0.00	0.00	
3,200.0	17.74	227.46	3,137.8	-300.8	-327.7	444.8	0.00	0.00	0.00	
3,240.0	17.74	227.46	3,175.8	-309.0	-336.7	457.0	0.00	0.00	0.00	
3,280.0	17.74	227.46	3,213.9	-317.2	-345.7	469.2	0.00	0.00	0.00	
3,320.0	17.74	227.46	3,252.0	-325.5	-354.6	481.4	0.00	0.00	0.00	
3,360.0	17.74	227.46	3,290.1	-333.7	-363.6	493.5	0.00	0.00	0.00	
3,400.0	17.74	227.46	3,328.2	-342.0	-372.6	505.7	0.00	0.00	0.00	
3,440.0	17.74	227.46	3,366.3	-350.2	-381.6	517.9	0.00	0.00	0.00	
3,480.0	17.74	227.46	3,404.4	-358.4	-390.6	530.1	0.00	0.00	0.00	
3,520.0	17.74	227.46	3,442.5	-366.7	-399.5	542.3	0.00	0.00	0.00	
3,560.0	17.74	227.46	3,480.6	-374.9	-408.5	554.5	0.00	0.00	0.00	
3,600.0	17.74	227.46	3,518.7	-383.1	-417.5	566.7	0.00	0.00	0.00	
3,640.0	17.74	227.46	3,556.8	-391.4	-426.5	578.8	0.00	0.00	0.00	
3,680.0	17.74	227.46	3,594.9	-399.6	-435.4	591.0	0.00	0.00	0.00	
3,720.0	17.74	227.46	3,633.0	-407.9	-444.4	603.2	0.00	0.00	0.00	
3,760.0	17.74	227.46	3,671.1	-416.1	-453.4	615.4	0.00	0.00	0.00	
3,800.0	17.74	227.46	3,709.2	-424.3	-462.4	627.6	0.00	0.00	0.00	
3,840.0	17.74	227.46	3,747.3	-432.6	-471.4	639.8	0.00	0.00	0.00	
3,880.0	17.74	227.46	3,785.4	-440.8	-480.3	651.9	0.00	0.00	0.00	
3,920.0	17.74	227.46	3,823.5	-449.1	-489.3	664.1	0.00	0.00	0.00	
3,960.0	17.74	227.46	3,861.6	-457.3	-498.3	676.3	0.00	0.00	0.00	
4,000.0	17.74	227.46	3,899.7	-465.5	-507.3	688.5	0.00	0.00	0.00	
4,040.0	17.74	227.46	3,937.8	-473.8	-516.2	700.7	0.00	0.00	0.00	

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Croissant USX 11-17D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 5089.0ft (Original Well Elev)
<b>Project:</b>	SEC.11-T1N-R66W	<b>MD Reference:</b>	WELL @ 5089.0ft (Original Well Elev)
<b>Site:</b>	Croissant USX WW11-02D Pad Sec.11-T1N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Croissant USX 11-17D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Croissant USX WW11-17D Plan #1 (7-01)		

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)	
4,080.0	17.74	227.46	3,975.9	-482.0	-525.2	712.9	0.00	0.00	0.00	
4,120.0	17.74	227.46	4,014.0	-490.3	-534.2	725.1	0.00	0.00	0.00	
4,160.0	17.74	227.46	4,052.1	-498.5	-543.2	737.2	0.00	0.00	0.00	
4,200.0	17.74	227.46	4,090.2	-506.7	-552.1	749.4	0.00	0.00	0.00	
4,240.0	17.74	227.46	4,128.3	-515.0	-561.1	761.6	0.00	0.00	0.00	
4,280.0	17.74	227.46	4,166.4	-523.2	-570.1	773.8	0.00	0.00	0.00	
4,320.0	17.74	227.46	4,204.5	-531.5	-579.1	786.0	0.00	0.00	0.00	
4,360.0	17.74	227.46	4,242.6	-539.7	-588.1	798.2	0.00	0.00	0.00	
4,400.0	17.74	227.46	4,280.7	-547.9	-597.0	810.4	0.00	0.00	0.00	
4,440.0	17.74	227.46	4,318.8	-556.2	-606.0	822.5	0.00	0.00	0.00	
4,480.0	17.74	227.46	4,356.9	-564.4	-615.0	834.7	0.00	0.00	0.00	
4,520.0	17.74	227.46	4,395.0	-572.6	-624.0	846.9	0.00	0.00	0.00	
4,560.0	17.74	227.46	4,433.1	-580.9	-632.9	859.1	0.00	0.00	0.00	
4,600.0	17.74	227.46	4,471.2	-589.1	-641.9	871.3	0.00	0.00	0.00	
4,640.0	17.74	227.46	4,509.3	-597.4	-650.9	883.5	0.00	0.00	0.00	
4,680.0	17.74	227.46	4,547.4	-605.6	-659.9	895.6	0.00	0.00	0.00	
4,720.0	17.74	227.46	4,585.5	-613.8	-668.9	907.8	0.00	0.00	0.00	
4,760.0	17.74	227.46	4,623.6	-622.1	-677.8	920.0	0.00	0.00	0.00	
4,800.0	17.74	227.46	4,661.7	-630.3	-686.8	932.2	0.00	0.00	0.00	
4,840.0	17.74	227.46	4,699.8	-638.6	-695.8	944.4	0.00	0.00	0.00	
4,880.0	17.74	227.46	4,737.9	-646.8	-704.8	956.6	0.00	0.00	0.00	
4,920.0	17.74	227.46	4,776.0	-655.0	-713.7	968.8	0.00	0.00	0.00	
4,960.0	17.74	227.46	4,814.1	-663.3	-722.7	980.9	0.00	0.00	0.00	
5,000.0	17.74	227.46	4,852.2	-671.5	-731.7	993.1	0.00	0.00	0.00	
5,040.0	17.74	227.46	4,890.3	-679.8	-740.7	1,005.3	0.00	0.00	0.00	
5,080.0	17.74	227.46	4,928.4	-688.0	-749.6	1,017.5	0.00	0.00	0.00	
5,120.0	17.74	227.46	4,966.5	-696.2	-758.6	1,029.7	0.00	0.00	0.00	
5,160.0	17.74	227.46	5,004.6	-704.5	-767.6	1,041.9	0.00	0.00	0.00	
5,183.9	17.74	227.46	5,027.3	-709.4	-773.0	1,049.1	0.00	0.00	0.00	
5,200.0	17.41	227.46	5,042.7	-712.7	-776.5	1,054.0	2.00	-2.00	0.00	
5,240.0	16.61	227.46	5,081.0	-720.6	-785.2	1,065.7	2.00	-2.00	0.00	
5,280.0	15.81	227.46	5,119.4	-728.1	-793.4	1,076.9	2.00	-2.00	0.00	
5,320.0	15.01	227.46	5,157.9	-735.3	-801.2	1,087.5	2.00	-2.00	0.00	
5,360.0	14.21	227.46	5,196.6	-742.2	-808.7	1,097.6	2.00	-2.00	0.00	
5,400.0	13.41	227.46	5,235.5	-748.6	-815.7	1,107.2	2.00	-2.00	0.00	
5,440.0	12.61	227.46	5,274.5	-754.7	-822.3	1,116.2	2.00	-2.00	0.00	
5,480.0	11.81	227.46	5,313.5	-760.4	-828.6	1,124.6	2.00	-2.00	0.00	
5,520.0	11.01	227.46	5,352.8	-765.8	-834.4	1,132.5	2.00	-2.00	0.00	
5,560.0	10.21	227.46	5,392.1	-770.8	-839.8	1,139.9	2.00	-2.00	0.00	
5,600.0	9.41	227.46	5,431.5	-775.4	-844.9	1,146.7	2.00	-2.00	0.00	
5,640.0	8.61	227.46	5,471.0	-779.6	-849.5	1,153.0	2.00	-2.00	0.00	
5,680.0	7.81	227.46	5,510.6	-783.5	-853.7	1,158.7	2.00	-2.00	0.00	
5,720.0	7.01	227.46	5,550.2	-787.0	-857.5	1,163.9	2.00	-2.00	0.00	
5,760.0	6.21	227.46	5,590.0	-790.1	-860.9	1,168.5	2.00	-2.00	0.00	
5,800.0	5.41	227.46	5,629.8	-792.8	-863.9	1,172.5	2.00	-2.00	0.00	
5,840.0	4.61	227.46	5,669.6	-795.2	-866.4	1,176.0	2.00	-2.00	0.00	
5,880.0	3.81	227.46	5,709.5	-797.2	-868.6	1,178.9	2.00	-2.00	0.00	
5,920.0	3.01	227.46	5,749.4	-798.8	-870.4	1,181.3	2.00	-2.00	0.00	
5,960.0	2.21	227.46	5,789.4	-800.0	-871.7	1,183.2	2.00	-2.00	0.00	
6,000.0	1.41	227.46	5,829.4	-800.9	-872.6	1,184.4	2.00	-2.00	0.00	
6,040.0	0.61	227.46	5,869.4	-801.3	-873.1	1,185.1	2.00	-2.00	0.00	
6,070.6	0.00	0.00	5,900.0	-801.4	-873.3	1,185.3	2.00	-2.00	432.74	
TARGET BHL 1350°FNL, 1340°FEL										

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Croissant USX 11-17D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 5089.0ft (Original Well Elev)
<b>Project:</b>	SEC.11-T1N-R66W	<b>MD Reference:</b>	WELL @ 5089.0ft (Original Well Elev)
<b>Site:</b>	Croissant USX WW11-02D Pad Sec.11-T1N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Croissant USX 11-17D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Croissant USX WW11-17D Plan #1 (7-01)		

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)
6,080.0	0.00	0.00	5,909.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
6,120.0	0.00	0.00	5,949.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
6,160.0	0.00	0.00	5,989.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
6,200.0	0.00	0.00	6,029.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
6,240.0	0.00	0.00	6,069.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
6,280.0	0.00	0.00	6,109.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
6,320.0	0.00	0.00	6,149.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
6,360.0	0.00	0.00	6,189.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
6,400.0	0.00	0.00	6,229.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
6,440.0	0.00	0.00	6,269.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
6,480.0	0.00	0.00	6,309.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
6,520.0	0.00	0.00	6,349.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
6,560.0	0.00	0.00	6,389.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
6,600.0	0.00	0.00	6,429.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
6,640.0	0.00	0.00	6,469.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
6,680.0	0.00	0.00	6,509.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
6,720.0	0.00	0.00	6,549.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
6,760.0	0.00	0.00	6,589.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
6,800.0	0.00	0.00	6,629.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
6,840.0	0.00	0.00	6,669.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
6,880.0	0.00	0.00	6,709.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
6,920.0	0.00	0.00	6,749.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
6,960.0	0.00	0.00	6,789.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
7,000.0	0.00	0.00	6,829.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
7,040.0	0.00	0.00	6,869.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
7,080.0	0.00	0.00	6,909.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
7,120.0	0.00	0.00	6,949.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
7,160.0	0.00	0.00	6,989.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
7,200.0	0.00	0.00	7,029.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
7,240.0	0.00	0.00	7,069.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
7,280.0	0.00	0.00	7,109.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
7,320.0	0.00	0.00	7,149.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
7,351.6	0.00	0.00	7,181.0	-801.4	-873.3	1,185.3	0.00	0.00	0.00
NIOBRARA - TARGET BOX 800' X 800' 1333'FNL, 1321'FEL - TARGET CIRCLE 1350'FNL, 1340'FEL									
7,360.0	0.00	0.00	7,189.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
7,400.0	0.00	0.00	7,229.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
7,440.0	0.00	0.00	7,269.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
7,480.0	0.00	0.00	7,309.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
7,520.0	0.00	0.00	7,349.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
7,560.0	0.00	0.00	7,389.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
7,600.0	0.00	0.00	7,429.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
7,640.0	0.00	0.00	7,469.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
7,680.0	0.00	0.00	7,509.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
7,710.6	0.00	0.00	7,540.0	-801.4	-873.3	1,185.3	0.00	0.00	0.00
CODELL									
7,720.0	0.00	0.00	7,549.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
7,760.0	0.00	0.00	7,589.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
7,800.0	0.00	0.00	7,629.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
7,840.0	0.00	0.00	7,669.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
7,880.0	0.00	0.00	7,709.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
7,920.0	0.00	0.00	7,749.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
7,960.0	0.00	0.00	7,789.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
8,000.0	0.00	0.00	7,829.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Croissant USX 11-17D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 5089.0ft (Original Well Elev)
<b>Project:</b>	SEC.11-T1N-R66W	<b>MD Reference:</b>	WELL @ 5089.0ft (Original Well Elev)
<b>Site:</b>	Croissant USX WW11-02D Pad Sec.11-T1N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Croissant USX 11-17D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Croissant USX WW11-17D Plan #1 (7-01)		

**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)
8,040.0	0.00	0.00	7,869.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
8,080.0	0.00	0.00	7,909.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
8,103.6	0.00	0.00	7,933.0	-801.4	-873.3	1,185.3	0.00	0.00	0.00
<b>D-SAND</b>									
8,120.0	0.00	0.00	7,949.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
8,160.0	0.00	0.00	7,989.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
8,163.6	0.00	0.00	7,993.0	-801.4	-873.3	1,185.3	0.00	0.00	0.00
<b>J-SAND</b>									
8,200.0	0.00	0.00	8,029.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
8,240.0	0.00	0.00	8,069.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
8,280.0	0.00	0.00	8,109.4	-801.4	-873.3	1,185.3	0.00	0.00	0.00
8,313.6	0.00	0.00	8,143.0	-801.4	-873.3	1,185.3	0.00	0.00	0.00

**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 BOX 800' X	0.00	0.00	7,181.0	-784.4	-854.3	216,234.45	4,120,549.70	40.069497	-104.739582
- plan misses target center by 25.5ft at 7351.6ft MD (7181.0 TVD, -801.4 N, -873.3 E)									
- Rectangle (sides W800.0 H800.0 D962.0)									
TARGET CIRCLE 135'	0.00	0.00	7,181.0	-801.4	-873.3	216,216.25	4,120,531.74	40.069450	-104.739650
- plan hits target center									
- Circle (radius 75.0)									
TARGET BHL 1350'F	0.00	0.00	5,900.0	-801.4	-873.3	216,216.25	4,120,531.74	40.069450	-104.739650
- plan hits target center									
- Point									

**Casing Points**

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
1,165.0	1,165.0	8 5/8"	8-5/8	12-1/4

**Formations**

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,351.6	7,181.0	NIOBRARA		0.00	
7,710.6	7,540.0	CODELL		0.00	
8,103.6	7,933.0	D-SAND		0.00	
8,163.6	7,993.0	J-SAND		0.00	