

# ENSIGN

## Directional

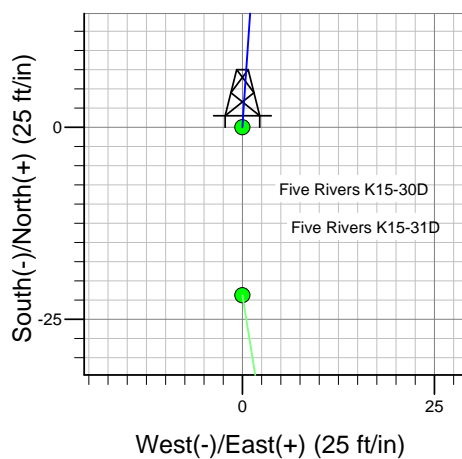
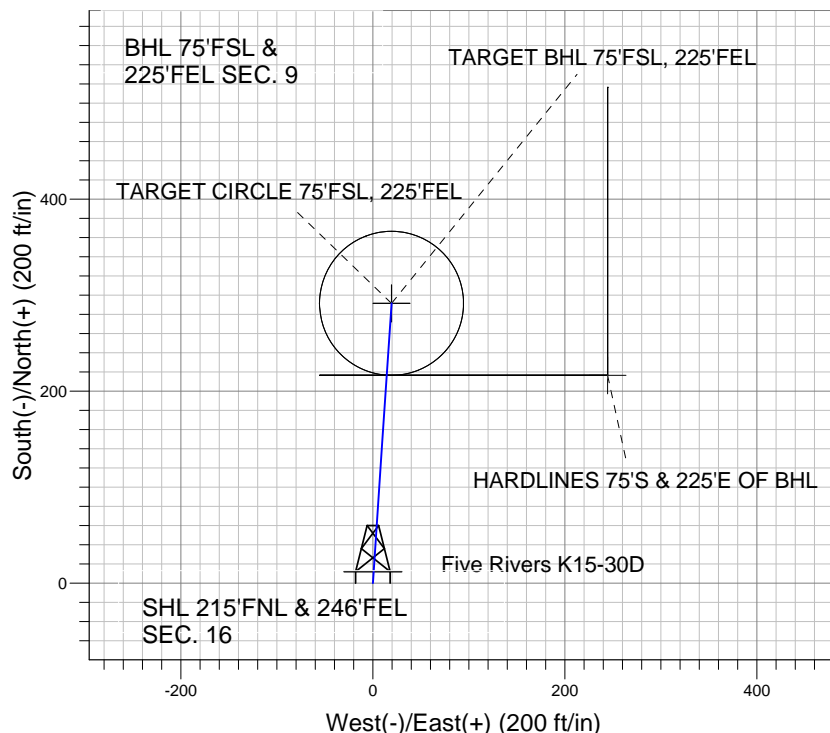
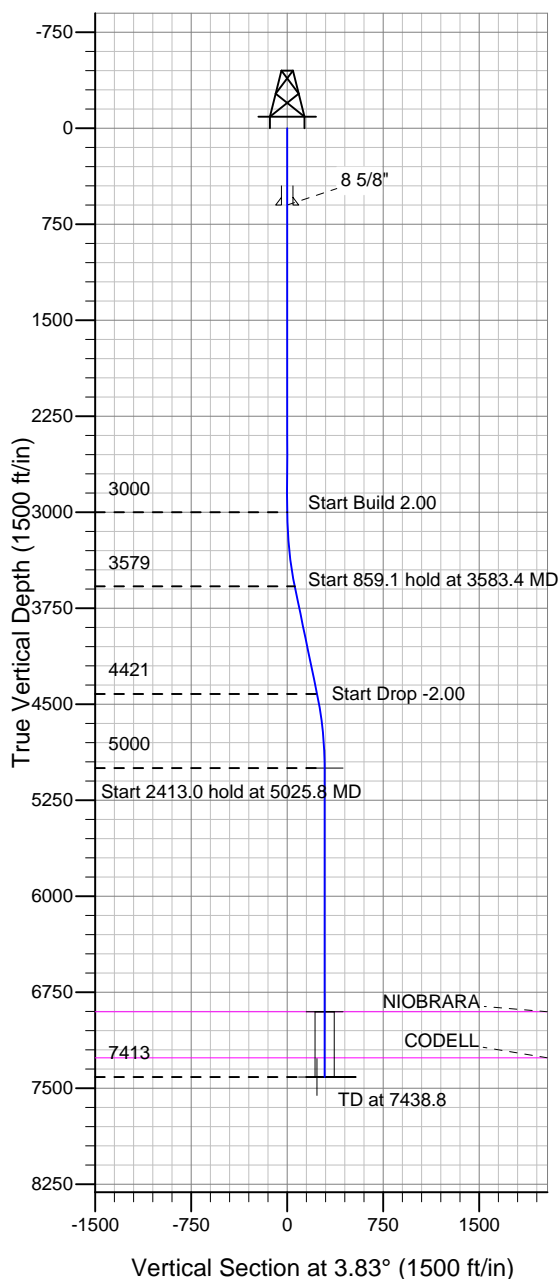
Well Name: **Five Rivers K15-30D**

Surface Location: Five Rivers K15-30D Pad Sec.16-T4N-R66W  
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4730.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1359636.93	3202403.59	40° 19' 5.988 N	104° 46' 26.868 W	
		Original Well Elev WELL @ 4743.0ft (Original Well Elev)				

### NOBLE ENERGY INC WELD COUNTY CO



Five Rivers K15-30D  
Noble Five Rivers K15-30D Plan #1 (06-22-10)  
8:12, June 28 2010



Azimuths to True North  
Magnetic North: 9.02°  
Magnetic Field  
Strength: 53261.0snT  
Dip Angle: 67.04°  
Date: 12/31/2009  
Model: IGRF200510

#### WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 75'FSL, 225'FEL	5000.0	291.5	19.5	40° 19' 8.868 N	104° 46' 26.616 W	Point
TARGET CIRCLE 75'FSL, 225'FEL	6903.0	291.5	19.5	40° 19' 8.868 N	104° 46' 26.616 W	Circle (Radius: 75.0)
HARDLINES 75'S & 225'E OF BHL	7413.0	216.5	244.5	40° 19' 8.127 N	104° 46' 23.712 W	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	3000.0	0.00	0.00	3000.0	0.0	0.0	0.00	0.00	0.0	
3	3583.4	11.67	3.83	3579.3	59.1	4.0	2.00	3.83	59.2	
4	4442.4	11.67	3.83	4420.7	232.4	15.6	0.00	0.00	232.9	
5	5025.8	0.00	0.00	5000.0	291.5	19.5	2.00	180.00	292.1	TARGET BHL 75'FSL, 225'FEL
6	7438.8	0.00	0.00	7413.0	291.5	19.5	0.00	0.00	292.1	



# **NOBLE ENERGY INC WELD COUNTY CO**

**SEC.16-T4N-R66W**

**Five Rivers K15-30D Pad Sec.16-T4N-R66W**

**Five Rivers K15-30D**

**Wellbore #1**

**Plan: Noble Five Rivers K15-30D Plan #1 (06-22-10)**

## **Standard Planning Report**

**28 June, 2010**

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Five Rivers K15-30D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 4743.0ft (Original Well Elev)
<b>Project:</b>	SEC.16-T4N-R66W	<b>MD Reference:</b>	WELL @ 4743.0ft (Original Well Elev)
<b>Site:</b>	Five Rivers K15-30D Pad Sec.16-T4N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Five Rivers K15-30D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Five Rivers K15-30D Plan #1 (06-22-10)		

<b>Project</b>	SEC.16-T4N-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>	Colorado Northern Zone		Using geodetic scale factor

Site						Five Rivers K15-30D Pad Sec.16-T4N-R66W								
Site Position:			Northing:			1,359,636.94 ft			Latitude:			40° 19' 5.988 N		
From:			Easting:			3,202,403.59ft			Longitude:			104° 46' 26.868 W		
Position Uncertainty:			Slot Radius:			"			Grid Convergence:			0.47 °		
Lat/Long														
0.0 ft														

Well	Five Rivers K15-30D					
Well Position	+N-S	0.0 ft	Northing:	1,359,636.93 ft	Latitude:	40° 19' 5.988 N
	+E-W	0.0 ft	Easting:	3,202,403.59 ft	Longitude:	104° 46' 26.868 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,730.0 ft

Wellbore	Wellbore #1
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/31/2009	9.02	67.04	53,261

<b>Design</b>	Noble Five Rivers K15-30D Plan #1 (06-22-10)
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<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	3.83

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	
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,583.4	11.67	3.83	3,579.3	59.1	4.0	2.00	2.00	0.00	3.83	
4,442.4	11.67	3.83	4,420.7	232.4	15.6	0.00	0.00	0.00	0.00	
5,025.8	0.00	0.00	5,000.0	291.5	19.5	2.00	-2.00	0.00	180.00	TARGET BHL 75°F
7,438.8	0.00	0.00	7,413.0	291.5	19.5	0.00	0.00	0.00	0.00	

**Database:** Landmark  
**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.16-T4N-R66W  
**Site:** Five Rivers K15-30D Pad Sec.16-T4N-R66W  
**Well:** Five Rivers K15-30D  
**Wellbore:** Wellbore #1  
**Design:** Noble Five Rivers K15-30D Plan #1 (06-22-10)

**Local Co-ordinate Reference:** Well Five Rivers K15-30D  
**TVD Reference:** WELL @ 4743.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4743.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

#### 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
8 5/8"									
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
1,200.0	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
1,320.0	0.00	0.00	1,320.0	0.0	0.0	0.0	0.00	0.00	0.00
1,360.0	0.00	0.00	1,360.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,440.0	0.00	0.00	1,440.0	0.0	0.0	0.0	0.00	0.00	0.00
1,480.0	0.00	0.00	1,480.0	0.0	0.0	0.0	0.00	0.00	0.00
1,520.0	0.00	0.00	1,520.0	0.0	0.0	0.0	0.00	0.00	0.00
1,560.0	0.00	0.00	1,560.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,640.0	0.00	0.00	1,640.0	0.0	0.0	0.0	0.00	0.00	0.00
1,680.0	0.00	0.00	1,680.0	0.0	0.0	0.0	0.00	0.00	0.00
1,720.0	0.00	0.00	1,720.0	0.0	0.0	0.0	0.00	0.00	0.00
1,760.0	0.00	0.00	1,760.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,840.0	0.00	0.00	1,840.0	0.0	0.0	0.0	0.00	0.00	0.00
1,880.0	0.00	0.00	1,880.0	0.0	0.0	0.0	0.00	0.00	0.00
1,920.0	0.00	0.00	1,920.0	0.0	0.0	0.0	0.00	0.00	0.00
1,960.0	0.00	0.00	1,960.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,040.0	0.00	0.00	2,040.0	0.0	0.0	0.0	0.00	0.00	0.00
2,080.0	0.00	0.00	2,080.0	0.0	0.0	0.0	0.00	0.00	0.00

**Database:** Landmark  
**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.16-T4N-R66W  
**Site:** Five Rivers K15-30D Pad Sec.16-T4N-R66W  
**Well:** Five Rivers K15-30D  
**Wellbore:** Wellbore #1  
**Design:** Noble Five Rivers K15-30D Plan #1 (06-22-10)

**Local Co-ordinate Reference:**  
**TVD Reference:**  
**MD Reference:**  
**North Reference:**  
**Survey Calculation Method:**

Well Five Rivers K15-30D  
 WELL @ 4743.0ft (Original Well Elev)  
 WELL @ 4743.0ft (Original Well Elev)  
 True  
 Minimum Curvature

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)
2,120.0	0.00	0.00	2,120.0	0.0	0.0	0.0	0.00	0.00	0.00
2,160.0	0.00	0.00	2,160.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,240.0	0.00	0.00	2,240.0	0.0	0.0	0.0	0.00	0.00	0.00
2,280.0	0.00	0.00	2,280.0	0.0	0.0	0.0	0.00	0.00	0.00
2,320.0	0.00	0.00	2,320.0	0.0	0.0	0.0	0.00	0.00	0.00
2,360.0	0.00	0.00	2,360.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,440.0	0.00	0.00	2,440.0	0.0	0.0	0.0	0.00	0.00	0.00
2,480.0	0.00	0.00	2,480.0	0.0	0.0	0.0	0.00	0.00	0.00
2,520.0	0.00	0.00	2,520.0	0.0	0.0	0.0	0.00	0.00	0.00
2,560.0	0.00	0.00	2,560.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,640.0	0.00	0.00	2,640.0	0.0	0.0	0.0	0.00	0.00	0.00
2,680.0	0.00	0.00	2,680.0	0.0	0.0	0.0	0.00	0.00	0.00
2,720.0	0.00	0.00	2,720.0	0.0	0.0	0.0	0.00	0.00	0.00
2,760.0	0.00	0.00	2,760.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,840.0	0.00	0.00	2,840.0	0.0	0.0	0.0	0.00	0.00	0.00
2,880.0	0.00	0.00	2,880.0	0.0	0.0	0.0	0.00	0.00	0.00
2,920.0	0.00	0.00	2,920.0	0.0	0.0	0.0	0.00	0.00	0.00
2,960.0	0.00	0.00	2,960.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,040.0	0.80	3.83	3,040.0	0.3	0.0	0.3	2.00	2.00	0.00
3,080.0	1.60	3.83	3,080.0	1.1	0.1	1.1	2.00	2.00	0.00
3,120.0	2.40	3.83	3,120.0	2.5	0.2	2.5	2.00	2.00	0.00
3,160.0	3.20	3.83	3,159.9	4.5	0.3	4.5	2.00	2.00	0.00
3,200.0	4.00	3.83	3,199.8	7.0	0.5	7.0	2.00	2.00	0.00
3,240.0	4.80	3.83	3,239.7	10.0	0.7	10.0	2.00	2.00	0.00
3,280.0	5.60	3.83	3,279.6	13.6	0.9	13.7	2.00	2.00	0.00
3,320.0	6.40	3.83	3,319.3	17.8	1.2	17.9	2.00	2.00	0.00
3,360.0	7.20	3.83	3,359.1	22.5	1.5	22.6	2.00	2.00	0.00
3,400.0	8.00	3.83	3,398.7	27.8	1.9	27.9	2.00	2.00	0.00
3,440.0	8.80	3.83	3,438.3	33.6	2.3	33.7	2.00	2.00	0.00
3,480.0	9.60	3.83	3,477.8	40.0	2.7	40.1	2.00	2.00	0.00
3,520.0	10.40	3.83	3,517.1	47.0	3.1	47.1	2.00	2.00	0.00
3,560.0	11.20	3.83	3,556.4	54.4	3.6	54.6	2.00	2.00	0.00
3,583.4	11.67	3.83	3,579.3	59.1	4.0	59.2	2.00	2.00	0.00
3,600.0	11.67	3.83	3,595.6	62.4	4.2	62.6	0.00	0.00	0.00
3,640.0	11.67	3.83	3,634.8	70.5	4.7	70.6	0.00	0.00	0.00
3,680.0	11.67	3.83	3,674.0	78.6	5.3	78.7	0.00	0.00	0.00
3,720.0	11.67	3.83	3,713.2	86.6	5.8	86.8	0.00	0.00	0.00
3,760.0	11.67	3.83	3,752.3	94.7	6.3	94.9	0.00	0.00	0.00
3,800.0	11.67	3.83	3,791.5	102.8	6.9	103.0	0.00	0.00	0.00
3,840.0	11.67	3.83	3,830.7	110.8	7.4	111.1	0.00	0.00	0.00
3,880.0	11.67	3.83	3,869.8	118.9	8.0	119.2	0.00	0.00	0.00
3,920.0	11.67	3.83	3,909.0	127.0	8.5	127.3	0.00	0.00	0.00
3,960.0	11.67	3.83	3,948.2	135.1	9.0	135.4	0.00	0.00	0.00
4,000.0	11.67	3.83	3,987.4	143.1	9.6	143.4	0.00	0.00	0.00
4,040.0	11.67	3.83	4,026.5	151.2	10.1	151.5	0.00	0.00	0.00
4,080.0	11.67	3.83	4,065.7	159.3	10.7	159.6	0.00	0.00	0.00
4,120.0	11.67	3.83	4,104.9	167.3	11.2	167.7	0.00	0.00	0.00
4,160.0	11.67	3.83	4,144.1	175.4	11.7	175.8	0.00	0.00	0.00
4,200.0	11.67	3.83	4,183.2	183.5	12.3	183.9	0.00	0.00	0.00

**Database:** Landmark  
**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.16-T4N-R66W  
**Site:** Five Rivers K15-30D Pad Sec.16-T4N-R66W  
**Well:** Five Rivers K15-30D  
**Wellbore:** Wellbore #1  
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**TVD Reference:** WELL @ 4743.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4743.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

#### 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)
4,240.0	11.67	3.83	4,222.4	191.6	12.8	192.0	0.00	0.00	0.00
4,280.0	11.67	3.83	4,261.6	199.6	13.4	200.1	0.00	0.00	0.00
4,320.0	11.67	3.83	4,300.8	207.7	13.9	208.2	0.00	0.00	0.00
4,360.0	11.67	3.83	4,339.9	215.8	14.5	216.2	0.00	0.00	0.00
4,400.0	11.67	3.83	4,379.1	223.8	15.0	224.3	0.00	0.00	0.00
4,440.0	11.67	3.83	4,418.3	231.9	15.5	232.4	0.00	0.00	0.00
4,442.4	11.67	3.83	4,420.7	232.4	15.6	232.9	0.00	0.00	0.00
4,480.0	10.92	3.83	4,457.5	239.7	16.1	240.3	2.00	-2.00	0.00
4,520.0	10.12	3.83	4,496.8	247.0	16.5	247.6	2.00	-2.00	0.00
4,560.0	9.32	3.83	4,536.3	253.8	17.0	254.3	2.00	-2.00	0.00
4,600.0	8.52	3.83	4,575.8	259.9	17.4	260.5	2.00	-2.00	0.00
4,640.0	7.72	3.83	4,615.4	265.6	17.8	266.2	2.00	-2.00	0.00
4,680.0	6.92	3.83	4,655.0	270.7	18.1	271.3	2.00	-2.00	0.00
4,720.0	6.12	3.83	4,694.8	275.2	18.4	275.8	2.00	-2.00	0.00
4,760.0	5.32	3.83	4,734.6	279.2	18.7	279.8	2.00	-2.00	0.00
4,800.0	4.52	3.83	4,774.4	282.6	18.9	283.2	2.00	-2.00	0.00
4,840.0	3.72	3.83	4,814.3	285.4	19.1	286.1	2.00	-2.00	0.00
4,880.0	2.92	3.83	4,854.3	287.8	19.3	288.4	2.00	-2.00	0.00
4,920.0	2.12	3.83	4,894.2	289.5	19.4	290.2	2.00	-2.00	0.00
4,960.0	1.32	3.83	4,934.2	290.7	19.5	291.4	2.00	-2.00	0.00
5,000.0	0.52	3.83	4,974.2	291.3	19.5	292.0	2.00	-2.00	0.00
5,025.8	0.00	0.00	5,000.0	291.5	19.5	292.1	2.00	-2.00	-14.85
<b>TARGET BHL 75'FSL, 225'FEL</b>									
5,040.0	0.00	0.00	5,014.2	291.5	19.5	292.1	0.00	0.00	0.00
5,080.0	0.00	0.00	5,054.2	291.5	19.5	292.1	0.00	0.00	0.00
5,120.0	0.00	0.00	5,094.2	291.5	19.5	292.1	0.00	0.00	0.00
5,160.0	0.00	0.00	5,134.2	291.5	19.5	292.1	0.00	0.00	0.00
5,200.0	0.00	0.00	5,174.2	291.5	19.5	292.1	0.00	0.00	0.00
5,240.0	0.00	0.00	5,214.2	291.5	19.5	292.1	0.00	0.00	0.00
5,280.0	0.00	0.00	5,254.2	291.5	19.5	292.1	0.00	0.00	0.00
5,320.0	0.00	0.00	5,294.2	291.5	19.5	292.1	0.00	0.00	0.00
5,360.0	0.00	0.00	5,334.2	291.5	19.5	292.1	0.00	0.00	0.00
5,400.0	0.00	0.00	5,374.2	291.5	19.5	292.1	0.00	0.00	0.00
5,440.0	0.00	0.00	5,414.2	291.5	19.5	292.1	0.00	0.00	0.00
5,480.0	0.00	0.00	5,454.2	291.5	19.5	292.1	0.00	0.00	0.00
5,520.0	0.00	0.00	5,494.2	291.5	19.5	292.1	0.00	0.00	0.00
5,560.0	0.00	0.00	5,534.2	291.5	19.5	292.1	0.00	0.00	0.00
5,600.0	0.00	0.00	5,574.2	291.5	19.5	292.1	0.00	0.00	0.00
5,640.0	0.00	0.00	5,614.2	291.5	19.5	292.1	0.00	0.00	0.00
5,680.0	0.00	0.00	5,654.2	291.5	19.5	292.1	0.00	0.00	0.00
5,720.0	0.00	0.00	5,694.2	291.5	19.5	292.1	0.00	0.00	0.00
5,760.0	0.00	0.00	5,734.2	291.5	19.5	292.1	0.00	0.00	0.00
5,800.0	0.00	0.00	5,774.2	291.5	19.5	292.1	0.00	0.00	0.00
5,840.0	0.00	0.00	5,814.2	291.5	19.5	292.1	0.00	0.00	0.00
5,880.0	0.00	0.00	5,854.2	291.5	19.5	292.1	0.00	0.00	0.00
5,920.0	0.00	0.00	5,894.2	291.5	19.5	292.1	0.00	0.00	0.00
5,960.0	0.00	0.00	5,934.2	291.5	19.5	292.1	0.00	0.00	0.00
6,000.0	0.00	0.00	5,974.2	291.5	19.5	292.1	0.00	0.00	0.00
6,040.0	0.00	0.00	6,014.2	291.5	19.5	292.1	0.00	0.00	0.00
6,080.0	0.00	0.00	6,054.2	291.5	19.5	292.1	0.00	0.00	0.00
6,120.0	0.00	0.00	6,094.2	291.5	19.5	292.1	0.00	0.00	0.00
6,160.0	0.00	0.00	6,134.2	291.5	19.5	292.1	0.00	0.00	0.00
6,200.0	0.00	0.00	6,174.2	291.5	19.5	292.1	0.00	0.00	0.00
6,240.0	0.00	0.00	6,214.2	291.5	19.5	292.1	0.00	0.00	0.00

**Database:** Landmark  
**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.16-T4N-R66W  
**Site:** Five Rivers K15-30D Pad Sec.16-T4N-R66W  
**Well:** Five Rivers K15-30D  
**Wellbore:** Wellbore #1  
**Design:** Noble Five Rivers K15-30D Plan #1 (06-22-10)

**Local Co-ordinate Reference:** Well Five Rivers K15-30D  
**TVD Reference:** WELL @ 4743.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4743.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

#### 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)
6,280.0	0.00	0.00	6,254.2	291.5	19.5	292.1	0.00	0.00	0.00
6,320.0	0.00	0.00	6,294.2	291.5	19.5	292.1	0.00	0.00	0.00
6,360.0	0.00	0.00	6,334.2	291.5	19.5	292.1	0.00	0.00	0.00
6,400.0	0.00	0.00	6,374.2	291.5	19.5	292.1	0.00	0.00	0.00
6,440.0	0.00	0.00	6,414.2	291.5	19.5	292.1	0.00	0.00	0.00
6,480.0	0.00	0.00	6,454.2	291.5	19.5	292.1	0.00	0.00	0.00
6,520.0	0.00	0.00	6,494.2	291.5	19.5	292.1	0.00	0.00	0.00
6,560.0	0.00	0.00	6,534.2	291.5	19.5	292.1	0.00	0.00	0.00
6,600.0	0.00	0.00	6,574.2	291.5	19.5	292.1	0.00	0.00	0.00
6,640.0	0.00	0.00	6,614.2	291.5	19.5	292.1	0.00	0.00	0.00
6,680.0	0.00	0.00	6,654.2	291.5	19.5	292.1	0.00	0.00	0.00
6,720.0	0.00	0.00	6,694.2	291.5	19.5	292.1	0.00	0.00	0.00
6,760.0	0.00	0.00	6,734.2	291.5	19.5	292.1	0.00	0.00	0.00
6,800.0	0.00	0.00	6,774.2	291.5	19.5	292.1	0.00	0.00	0.00
6,840.0	0.00	0.00	6,814.2	291.5	19.5	292.1	0.00	0.00	0.00
6,880.0	0.00	0.00	6,854.2	291.5	19.5	292.1	0.00	0.00	0.00
6,920.0	0.00	0.00	6,894.2	291.5	19.5	292.1	0.00	0.00	0.00
6,928.8	0.00	0.00	6,903.0	291.5	19.5	292.1	0.00	0.00	0.00
<b>NIORARA - TARGET CIRCLE 75'FSL, 225'FEL</b>									
6,960.0	0.00	0.00	6,934.2	291.5	19.5	292.1	0.00	0.00	0.00
7,000.0	0.00	0.00	6,974.2	291.5	19.5	292.1	0.00	0.00	0.00
7,040.0	0.00	0.00	7,014.2	291.5	19.5	292.1	0.00	0.00	0.00
7,080.0	0.00	0.00	7,054.2	291.5	19.5	292.1	0.00	0.00	0.00
7,120.0	0.00	0.00	7,094.2	291.5	19.5	292.1	0.00	0.00	0.00
7,160.0	0.00	0.00	7,134.2	291.5	19.5	292.1	0.00	0.00	0.00
7,200.0	0.00	0.00	7,174.2	291.5	19.5	292.1	0.00	0.00	0.00
7,240.0	0.00	0.00	7,214.2	291.5	19.5	292.1	0.00	0.00	0.00
7,280.0	0.00	0.00	7,254.2	291.5	19.5	292.1	0.00	0.00	0.00
7,288.8	0.00	0.00	7,263.0	291.5	19.5	292.1	0.00	0.00	0.00
<b>CODELL</b>									
7,320.0	0.00	0.00	7,294.2	291.5	19.5	292.1	0.00	0.00	0.00
7,360.0	0.00	0.00	7,334.2	291.5	19.5	292.1	0.00	0.00	0.00
7,400.0	0.00	0.00	7,374.2	291.5	19.5	292.1	0.00	0.00	0.00
7,438.8	0.00	0.00	7,413.0	291.5	19.5	292.1	0.00	0.00	0.00
<b>HARDLINES 75'S &amp; 225'E OF BHL</b>									

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Five Rivers K15-30D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 4743.0ft (Original Well Elev)
<b>Project:</b>	SEC.16-T4N-R66W	<b>MD Reference:</b>	WELL @ 4743.0ft (Original Well Elev)
<b>Site:</b>	Five Rivers K15-30D Pad Sec.16-T4N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Five Rivers K15-30D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Five Rivers K15-30D Plan #1 (06-22-10)		

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 CIRCLE 75'	0.00	0.00	6,903.0	291.5	19.5	1,359,928.57	3,202,420.71	40° 19' 8.868 N	104° 46' 26.616 W
- plan misses by 0.1ft at 6928.8ft MD (6903.0 TVD, 291.5 N, 19.5 E)									
- Circle (radius 75.0)									
HARDLINES 75'S & 2	0.00	0.00	7,413.0	216.5	244.5	1,359,855.41	3,202,646.30	40° 19' 8.127 N	104° 46' 23.712 W
- plan misses by 237.1ft at 7438.8ft MD (7413.0 TVD, 291.5 N, 19.5 E)									
- Polygon									
Point 1			7,413.0	0.0	0.0	1,359,855.41	3,202,646.30		
Point 2			7,413.0	0.0	-300.0	1,359,852.96	3,202,346.33		
Point 3			7,413.0	0.0	0.0	1,359,855.41	3,202,646.30		
Point 4			7,413.0	300.0	0.0	1,360,155.39	3,202,643.85		
TARGET BHL 75'FSL	0.00	0.00	5,000.0	291.5	19.5	1,359,928.52	3,202,420.73	40° 19' 8.868 N	104° 46' 26.616 W
- plan hits target									
- Point									

Casing Points					
	Measured Depth	Vertical Depth		Casing Diameter	Hole Diameter
	(ft)	(ft)	Name	(")	(")
	600.0	600.0	8 5/8"	8-5/8	12-1/4

Formations						
	Measured Depth	Vertical Depth			Dip	Dip Direction
	(ft)	(ft)	Name	Lithology	(°)	(°)
	6,928.8	6,903.0	NIOBRARA		0.00	
	7,288.8	7,263.0	CODELL		0.00	