

ENSIGN

Directional

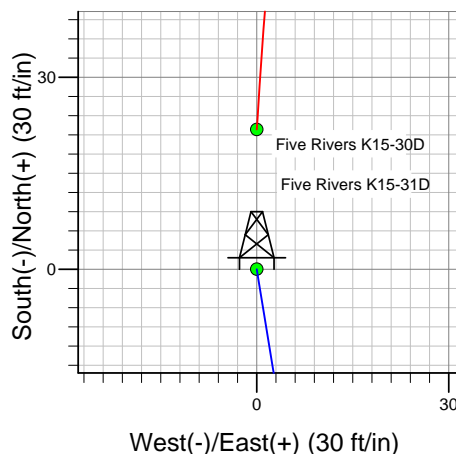
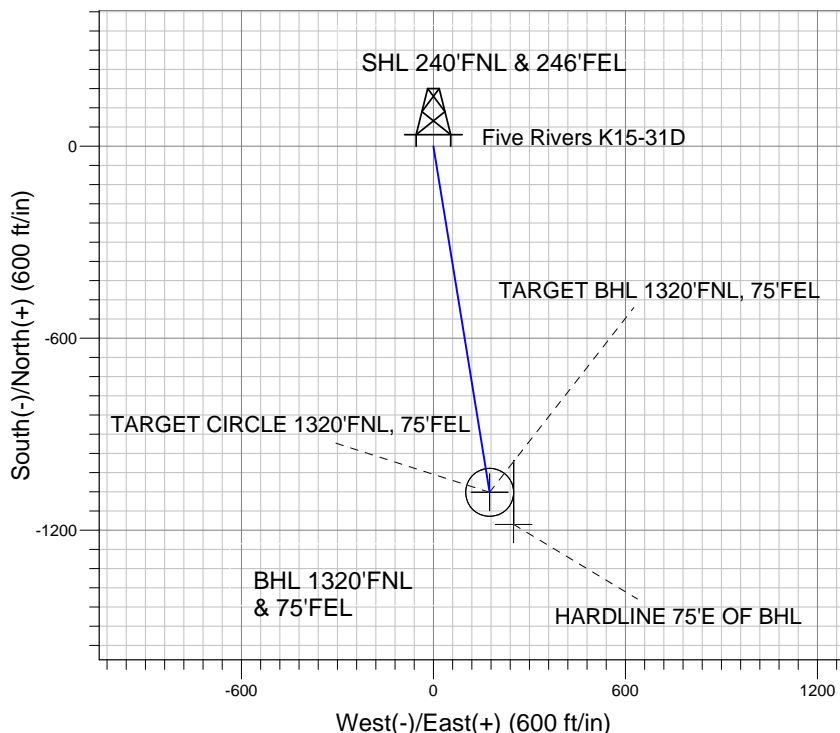
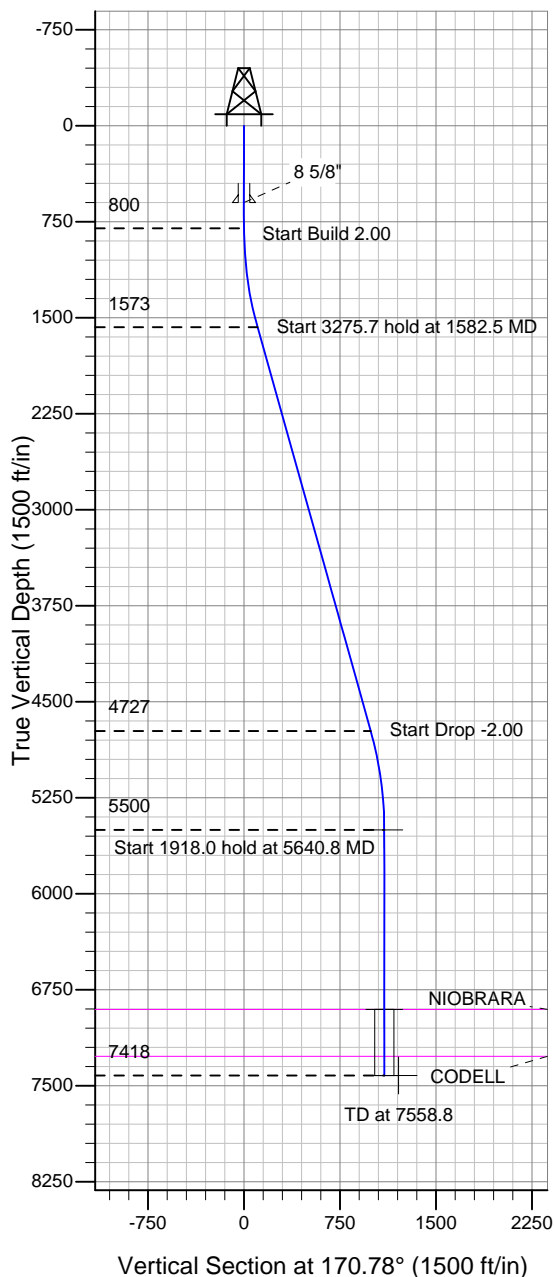
Well Name: Five Rivers K15-31D

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	1359615.07	3202403.77	40° 19' 5.772 N	104° 46' 26.868 W	
Original Well Elev WELL @ 4743.0ft (Original Well Elev)						

NOBLE ENERGY INC WELD COUNTY CO



Five Rivers K15-31D
Noble Five Rivers K15-31D Plan #1 (06-22-10)
12:01, June 23 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 1320'FNL, 75'FEL	5500.0	-1082.0	175.7	40° 18' 55.080 N	104° 46' 24.600 W	Point
TARGET CIRCLE 1320'FNL, 75'FEL	6903.0	-1082.0	175.7	40° 18' 55.080 N	104° 46' 24.600 W	Circle (Radius: 75.0)
HARDLINE 75'E OF BHL	7418.0	-1182.0	250.7	40° 18' 54.092 N	104° 46' 23.632 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	800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.0	
3	1582.5	15.65	170.78	1572.9	-104.8	17.0	2.00	170.78	106.2	
4	4858.3	15.65	170.78	4727.1	-977.1	158.7	0.00	0.00	989.9	
5	5640.8	0.00	0.00	5500.0	-1082.0	175.7	2.00	180.00	1096.2	TARGET BHL 1320'FNL, 75'FEL
6	7558.8	0.00	0.00	7418.0	-1082.0	175.7	0.00	0.00	1096.2	



NOBLE ENERGY INC WELD COUNTY CO

SEC.16-T4N-R66W

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

Five Rivers K15-31D

Wellbore #1

Plan: Noble Five Rivers K15-31D Plan #1 (06-22-10)

Standard Planning Report

23 June, 2010

Database:	Landmark	Local Co-ordinate Reference:	Well Five Rivers K15-31D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4743.0ft (Original Well Elev)
Project:	SEC.16-T4N-R66W	MD Reference:	WELL @ 4743.0ft (Original Well Elev)
Site:	Five Rivers K15-30D Pad Sec.16-T4N-R66W	North Reference:	True
Well:	Five Rivers K15-31D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Five Rivers K15-31D Plan #1 (06-22-10)		

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

Well	Five Rivers K15-31D					
Well Position	+N-S	-21.9 ft	Northing:	1,359,615.07 ft	Latitude:	40° 19' 5.772 N
	+E-W	0.0 ft	Easting:	3,202,403.77 ft	Longitude:	104° 46' 26.868 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,730.0 ft

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

Design	Noble Five Rivers K15-31D Plan #1 (06-22-10)			
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	170.78

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	
800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,582.5	15.65	170.78	1,572.9	-104.8	17.0	2.00	2.00	0.00	170.78	
4,858.3	15.65	170.78	4,727.1	-977.1	158.7	0.00	0.00	0.00	0.00	
5,640.8	0.00	0.00	5,500.0	-1,082.0	175.7	2.00	-2.00	0.00	180.00	TARGET BHL 132C
7,558.8	0.00	0.00	7,418.0	-1,082.0	175.7	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 K15-31D
Wellbore: Wellbore #1
Design: Noble Five Rivers K15-31D Plan #1 (06-22-10)

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

Well Five Rivers K15-31D
 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)
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	0.80	170.78	840.0	-0.3	0.0	0.3	2.00	2.00	0.00
880.0	1.60	170.78	880.0	-1.1	0.2	1.1	2.00	2.00	0.00
920.0	2.40	170.78	920.0	-2.5	0.4	2.5	2.00	2.00	0.00
960.0	3.20	170.78	959.9	-4.4	0.7	4.5	2.00	2.00	0.00
1,000.0	4.00	170.78	999.8	-6.9	1.1	7.0	2.00	2.00	0.00
1,040.0	4.80	170.78	1,039.7	-9.9	1.6	10.0	2.00	2.00	0.00
1,080.0	5.60	170.78	1,079.6	-13.5	2.2	13.7	2.00	2.00	0.00
1,120.0	6.40	170.78	1,119.3	-17.6	2.9	17.9	2.00	2.00	0.00
1,160.0	7.20	170.78	1,159.1	-22.3	3.6	22.6	2.00	2.00	0.00
1,200.0	8.00	170.78	1,198.7	-27.5	4.5	27.9	2.00	2.00	0.00
1,240.0	8.80	170.78	1,238.3	-33.3	5.4	33.7	2.00	2.00	0.00
1,280.0	9.60	170.78	1,277.8	-39.6	6.4	40.1	2.00	2.00	0.00
1,320.0	10.40	170.78	1,317.1	-46.5	7.5	47.1	2.00	2.00	0.00
1,360.0	11.20	170.78	1,356.4	-53.9	8.7	54.6	2.00	2.00	0.00
1,400.0	12.00	170.78	1,395.6	-61.8	10.0	62.6	2.00	2.00	0.00
1,440.0	12.80	170.78	1,434.7	-70.3	11.4	71.2	2.00	2.00	0.00
1,480.0	13.60	170.78	1,473.6	-79.3	12.9	80.3	2.00	2.00	0.00
1,520.0	14.40	170.78	1,512.4	-88.8	14.4	90.0	2.00	2.00	0.00
1,560.0	15.20	170.78	1,551.1	-98.9	16.1	100.2	2.00	2.00	0.00
1,582.5	15.65	170.78	1,572.9	-104.8	17.0	106.2	2.00	2.00	0.00
1,600.0	15.65	170.78	1,589.7	-109.5	17.8	110.9	0.00	0.00	0.00
1,640.0	15.65	170.78	1,628.2	-120.1	19.5	121.7	0.00	0.00	0.00
1,680.0	15.65	170.78	1,666.7	-130.8	21.2	132.5	0.00	0.00	0.00
1,720.0	15.65	170.78	1,705.2	-141.4	23.0	143.3	0.00	0.00	0.00
1,760.0	15.65	170.78	1,743.7	-152.1	24.7	154.1	0.00	0.00	0.00
1,800.0	15.65	170.78	1,782.2	-162.7	26.4	164.9	0.00	0.00	0.00
1,840.0	15.65	170.78	1,820.8	-173.4	28.2	175.7	0.00	0.00	0.00
1,880.0	15.65	170.78	1,859.3	-184.1	29.9	186.5	0.00	0.00	0.00
1,920.0	15.65	170.78	1,897.8	-194.7	31.6	197.3	0.00	0.00	0.00
1,960.0	15.65	170.78	1,936.3	-205.4	33.3	208.0	0.00	0.00	0.00
2,000.0	15.65	170.78	1,974.8	-216.0	35.1	218.8	0.00	0.00	0.00
2,040.0	15.65	170.78	2,013.3	-226.7	36.8	229.6	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Five Rivers K15-31D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4743.0ft (Original Well Elev)
Project:	SEC.16-T4N-R66W	MD Reference:	WELL @ 4743.0ft (Original Well Elev)
Site:	Five Rivers K15-30D Pad Sec.16-T4N-R66W	North Reference:	True
Well:	Five Rivers K15-31D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Five Rivers K15-31D Plan #1 (06-22-10)		

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)
2,080.0	15.65	170.78	2,051.9	-237.3	38.5	240.4	0.00	0.00	0.00
2,120.0	15.65	170.78	2,090.4	-248.0	40.3	251.2	0.00	0.00	0.00
2,160.0	15.65	170.78	2,128.9	-258.6	42.0	262.0	0.00	0.00	0.00
2,200.0	15.65	170.78	2,167.4	-269.3	43.7	272.8	0.00	0.00	0.00
2,240.0	15.65	170.78	2,205.9	-279.9	45.5	283.6	0.00	0.00	0.00
2,280.0	15.65	170.78	2,244.4	-290.6	47.2	294.4	0.00	0.00	0.00
2,320.0	15.65	170.78	2,283.0	-301.2	48.9	305.2	0.00	0.00	0.00
2,360.0	15.65	170.78	2,321.5	-311.9	50.6	316.0	0.00	0.00	0.00
2,400.0	15.65	170.78	2,360.0	-322.5	52.4	326.7	0.00	0.00	0.00
2,440.0	15.65	170.78	2,398.5	-333.2	54.1	337.5	0.00	0.00	0.00
2,480.0	15.65	170.78	2,437.0	-343.8	55.8	348.3	0.00	0.00	0.00
2,520.0	15.65	170.78	2,475.5	-354.5	57.6	359.1	0.00	0.00	0.00
2,560.0	15.65	170.78	2,514.1	-365.1	59.3	369.9	0.00	0.00	0.00
2,600.0	15.65	170.78	2,552.6	-375.8	61.0	380.7	0.00	0.00	0.00
2,640.0	15.65	170.78	2,591.1	-386.4	62.7	391.5	0.00	0.00	0.00
2,680.0	15.65	170.78	2,629.6	-397.1	64.5	402.3	0.00	0.00	0.00
2,720.0	15.65	170.78	2,668.1	-407.7	66.2	413.1	0.00	0.00	0.00
2,760.0	15.65	170.78	2,706.6	-418.4	67.9	423.9	0.00	0.00	0.00
2,800.0	15.65	170.78	2,745.2	-429.0	69.7	434.7	0.00	0.00	0.00
2,840.0	15.65	170.78	2,783.7	-439.7	71.4	445.4	0.00	0.00	0.00
2,880.0	15.65	170.78	2,822.2	-450.3	73.1	456.2	0.00	0.00	0.00
2,920.0	15.65	170.78	2,860.7	-461.0	74.9	467.0	0.00	0.00	0.00
2,960.0	15.65	170.78	2,899.2	-471.6	76.6	477.8	0.00	0.00	0.00
3,000.0	15.65	170.78	2,937.7	-482.3	78.3	488.6	0.00	0.00	0.00
3,040.0	15.65	170.78	2,976.3	-492.9	80.0	499.4	0.00	0.00	0.00
3,080.0	15.65	170.78	3,014.8	-503.6	81.8	510.2	0.00	0.00	0.00
3,120.0	15.65	170.78	3,053.3	-514.2	83.5	521.0	0.00	0.00	0.00
3,160.0	15.65	170.78	3,091.8	-524.9	85.2	531.8	0.00	0.00	0.00
3,200.0	15.65	170.78	3,130.3	-535.6	87.0	542.6	0.00	0.00	0.00
3,240.0	15.65	170.78	3,168.9	-546.2	88.7	553.4	0.00	0.00	0.00
3,280.0	15.65	170.78	3,207.4	-556.9	90.4	564.1	0.00	0.00	0.00
3,320.0	15.65	170.78	3,245.9	-567.5	92.1	574.9	0.00	0.00	0.00
3,360.0	15.65	170.78	3,284.4	-578.2	93.9	585.7	0.00	0.00	0.00
3,400.0	15.65	170.78	3,322.9	-588.8	95.6	596.5	0.00	0.00	0.00
3,440.0	15.65	170.78	3,361.4	-599.5	97.3	607.3	0.00	0.00	0.00
3,480.0	15.65	170.78	3,400.0	-610.1	99.1	618.1	0.00	0.00	0.00
3,520.0	15.65	170.78	3,438.5	-620.8	100.8	628.9	0.00	0.00	0.00
3,560.0	15.65	170.78	3,477.0	-631.4	102.5	639.7	0.00	0.00	0.00
3,600.0	15.65	170.78	3,515.5	-642.1	104.3	650.5	0.00	0.00	0.00
3,640.0	15.65	170.78	3,554.0	-652.7	106.0	661.3	0.00	0.00	0.00
3,680.0	15.65	170.78	3,592.5	-663.4	107.7	672.1	0.00	0.00	0.00
3,720.0	15.65	170.78	3,631.1	-674.0	109.4	682.9	0.00	0.00	0.00
3,760.0	15.65	170.78	3,669.6	-684.7	111.2	693.6	0.00	0.00	0.00
3,800.0	15.65	170.78	3,708.1	-695.3	112.9	704.4	0.00	0.00	0.00
3,840.0	15.65	170.78	3,746.6	-706.0	114.6	715.2	0.00	0.00	0.00
3,880.0	15.65	170.78	3,785.1	-716.6	116.4	726.0	0.00	0.00	0.00
3,920.0	15.65	170.78	3,823.6	-727.3	118.1	736.8	0.00	0.00	0.00
3,960.0	15.65	170.78	3,862.2	-737.9	119.8	747.6	0.00	0.00	0.00
4,000.0	15.65	170.78	3,900.7	-748.6	121.6	758.4	0.00	0.00	0.00
4,040.0	15.65	170.78	3,939.2	-759.2	123.3	769.2	0.00	0.00	0.00
4,080.0	15.65	170.78	3,977.7	-769.9	125.0	780.0	0.00	0.00	0.00
4,120.0	15.65	170.78	4,016.2	-780.5	126.7	790.8	0.00	0.00	0.00
4,160.0	15.65	170.78	4,054.7	-791.2	128.5	801.6	0.00	0.00	0.00
4,200.0	15.65	170.78	4,093.3	-801.8	130.2	812.3	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Five Rivers K15-31D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4743.0ft (Original Well Elev)
Project:	SEC.16-T4N-R66W	MD Reference:	WELL @ 4743.0ft (Original Well Elev)
Site:	Five Rivers K15-30D Pad Sec.16-T4N-R66W	North Reference:	True
Well:	Five Rivers K15-31D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Five Rivers K15-31D Plan #1 (06-22-10)		

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	15.65	170.78	4,131.8	-812.5	131.9	823.1	0.00	0.00	0.00
4,280.0	15.65	170.78	4,170.3	-823.1	133.7	833.9	0.00	0.00	0.00
4,320.0	15.65	170.78	4,208.8	-833.8	135.4	844.7	0.00	0.00	0.00
4,360.0	15.65	170.78	4,247.3	-844.4	137.1	855.5	0.00	0.00	0.00
4,400.0	15.65	170.78	4,285.8	-855.1	138.8	866.3	0.00	0.00	0.00
4,440.0	15.65	170.78	4,324.4	-865.8	140.6	877.1	0.00	0.00	0.00
4,480.0	15.65	170.78	4,362.9	-876.4	142.3	887.9	0.00	0.00	0.00
4,520.0	15.65	170.78	4,401.4	-887.1	144.0	898.7	0.00	0.00	0.00
4,560.0	15.65	170.78	4,439.9	-897.7	145.8	909.5	0.00	0.00	0.00
4,600.0	15.65	170.78	4,478.4	-908.4	147.5	920.3	0.00	0.00	0.00
4,640.0	15.65	170.78	4,516.9	-919.0	149.2	931.0	0.00	0.00	0.00
4,680.0	15.65	170.78	4,555.5	-929.7	151.0	941.8	0.00	0.00	0.00
4,720.0	15.65	170.78	4,594.0	-940.3	152.7	952.6	0.00	0.00	0.00
4,760.0	15.65	170.78	4,632.5	-951.0	154.4	963.4	0.00	0.00	0.00
4,800.0	15.65	170.78	4,671.0	-961.6	156.1	974.2	0.00	0.00	0.00
4,840.0	15.65	170.78	4,709.5	-972.3	157.9	985.0	0.00	0.00	0.00
4,858.3	15.65	170.78	4,727.1	-977.1	158.7	989.9	0.00	0.00	0.00
4,880.0	15.22	170.78	4,748.1	-982.8	159.6	995.7	2.00	-2.00	0.00
4,920.0	14.42	170.78	4,786.7	-992.9	161.2	1,005.9	2.00	-2.00	0.00
4,960.0	13.62	170.78	4,825.5	-1,002.5	162.8	1,015.6	2.00	-2.00	0.00
5,000.0	12.82	170.78	4,864.5	-1,011.5	164.2	1,024.8	2.00	-2.00	0.00
5,040.0	12.02	170.78	4,903.5	-1,020.0	165.6	1,033.4	2.00	-2.00	0.00
5,080.0	11.22	170.78	4,942.7	-1,028.0	166.9	1,041.4	2.00	-2.00	0.00
5,120.0	10.42	170.78	4,982.0	-1,035.4	168.1	1,048.9	2.00	-2.00	0.00
5,160.0	9.62	170.78	5,021.4	-1,042.2	169.2	1,055.9	2.00	-2.00	0.00
5,200.0	8.82	170.78	5,060.9	-1,048.6	170.3	1,062.3	2.00	-2.00	0.00
5,240.0	8.02	170.78	5,100.5	-1,054.3	171.2	1,068.2	2.00	-2.00	0.00
5,280.0	7.22	170.78	5,140.1	-1,059.6	172.1	1,073.5	2.00	-2.00	0.00
5,320.0	6.42	170.78	5,179.8	-1,064.3	172.8	1,078.2	2.00	-2.00	0.00
5,360.0	5.62	170.78	5,219.6	-1,068.4	173.5	1,082.4	2.00	-2.00	0.00
5,400.0	4.82	170.78	5,259.4	-1,072.0	174.1	1,086.0	2.00	-2.00	0.00
5,440.0	4.02	170.78	5,299.3	-1,075.0	174.6	1,089.1	2.00	-2.00	0.00
5,480.0	3.22	170.78	5,339.2	-1,077.5	175.0	1,091.6	2.00	-2.00	0.00
5,520.0	2.42	170.78	5,379.2	-1,079.5	175.3	1,093.6	2.00	-2.00	0.00
5,560.0	1.62	170.78	5,419.2	-1,080.9	175.5	1,095.0	2.00	-2.00	0.00
5,600.0	0.82	170.78	5,459.2	-1,081.7	175.6	1,095.9	2.00	-2.00	0.00
5,640.0	0.02	170.78	5,499.2	-1,082.0	175.7	1,096.2	2.00	-2.00	0.00
5,640.8	0.00	0.00	5,500.0	-1,082.0	175.7	1,096.2	2.00	-2.00	-20,193.03
TARGET BHL 1320'FNL, 75'FEL									
5,680.0	0.00	0.00	5,539.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
5,720.0	0.00	0.00	5,579.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
5,760.0	0.00	0.00	5,619.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
5,800.0	0.00	0.00	5,659.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
5,840.0	0.00	0.00	5,699.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
5,880.0	0.00	0.00	5,739.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
5,920.0	0.00	0.00	5,779.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
5,960.0	0.00	0.00	5,819.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
6,000.0	0.00	0.00	5,859.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
6,040.0	0.00	0.00	5,899.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
6,080.0	0.00	0.00	5,939.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
6,120.0	0.00	0.00	5,979.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
6,160.0	0.00	0.00	6,019.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
6,200.0	0.00	0.00	6,059.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
6,240.0	0.00	0.00	6,099.2	-1,082.0	175.7	1,096.2	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 K15-31D
Wellbore: Wellbore #1
Design: Noble Five Rivers K15-31D Plan #1 (06-22-10)

Local Co-ordinate Reference: Well Five Rivers K15-31D
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	6,139.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
6,320.0	0.00	0.00	6,179.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
6,360.0	0.00	0.00	6,219.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
6,400.0	0.00	0.00	6,259.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
6,440.0	0.00	0.00	6,299.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
6,480.0	0.00	0.00	6,339.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
6,520.0	0.00	0.00	6,379.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
6,560.0	0.00	0.00	6,419.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
6,600.0	0.00	0.00	6,459.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
6,640.0	0.00	0.00	6,499.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
6,680.0	0.00	0.00	6,539.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
6,720.0	0.00	0.00	6,579.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
6,760.0	0.00	0.00	6,619.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
6,800.0	0.00	0.00	6,659.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
6,840.0	0.00	0.00	6,699.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
6,880.0	0.00	0.00	6,739.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
6,920.0	0.00	0.00	6,779.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
6,960.0	0.00	0.00	6,819.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
7,000.0	0.00	0.00	6,859.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
7,040.0	0.00	0.00	6,899.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
7,043.8	0.00	0.00	6,903.0	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
NIORARA - TARGET CIRCLE 1320'FNL, 75'FEL									
7,080.0	0.00	0.00	6,939.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
7,120.0	0.00	0.00	6,979.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
7,160.0	0.00	0.00	7,019.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
7,200.0	0.00	0.00	7,059.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
7,240.0	0.00	0.00	7,099.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
7,280.0	0.00	0.00	7,139.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
7,320.0	0.00	0.00	7,179.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
7,360.0	0.00	0.00	7,219.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
7,400.0	0.00	0.00	7,259.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
7,408.8	0.00	0.00	7,268.0	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
CODELL									
7,440.0	0.00	0.00	7,299.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
7,480.0	0.00	0.00	7,339.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
7,520.0	0.00	0.00	7,379.2	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
7,558.8	0.00	0.00	7,418.0	-1,082.0	175.7	1,096.2	0.00	0.00	0.00
HARDLINE 75'E OF BHL									

Database: Landmark
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Local Co-ordinate Reference: Well Five Rivers K15-31D
TVD Reference: WELL @ 4743.0ft (Original Well Elev)
MD Reference: WELL @ 4743.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

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									
HARDLINE 75'E OF E	0.00	0.00	7,418.0	-1,182.0	250.7	1,358,435.22	3,202,664.13	40° 18' 54.092 N	104° 46' 23.632 W
- plan misses by 125.0ft at 7558.8ft MD (7418.0 TVD, -1082.0 N, 175.7 E)									
- Polygon									
Point 1			7,418.0	0.0	0.0	1,358,435.22	3,202,664.13		
Point 2			7,418.0	200.0	0.0	1,358,635.20	3,202,662.49		
TARGET CIRCLE 132	0.00	0.00	6,903.0	-1,082.0	175.7	1,358,534.60	3,202,588.32	40° 18' 55.080 N	104° 46' 24.600 W
- plan hits target									
- Circle (radius 75.0)									
TARGET BHL 1320'F	0.00	0.00	5,500.0	-1,082.0	175.7	1,358,534.61	3,202,588.30	40° 18' 55.080 N	104° 46' 24.600 W
- plan hits target									
- Point									

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

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,043.8	6,903.0	NIOBRARA		0.00	
7,408.8	7,268.0	CODELL		0.00	