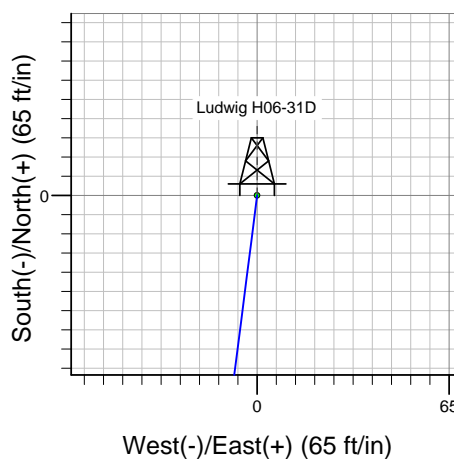
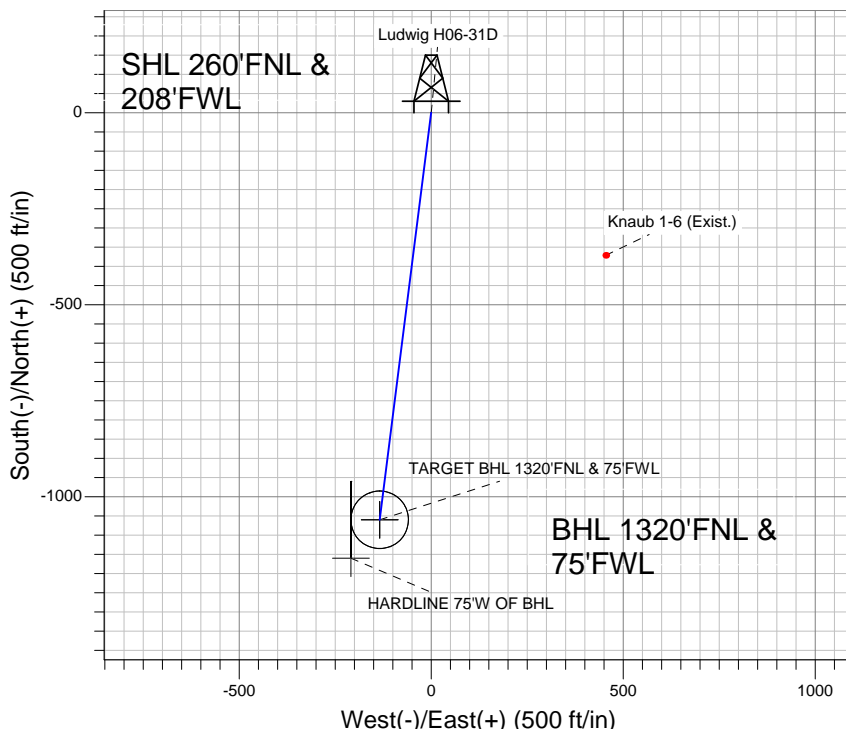
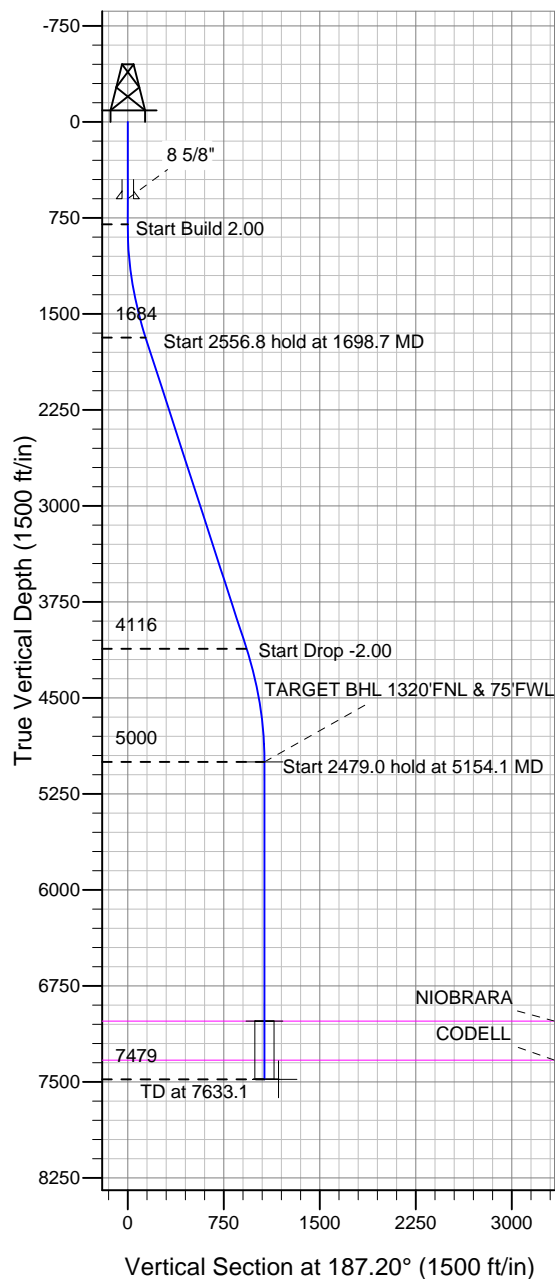


Well Name: Ludwig H06-31D

Surface Location: Ludwig H06-31D Pad Sec.6-T3N-R65W
 North American Datum 1983, US State Plane 1983 Colorado Northern Zone
 Ground Elevation: 4901.0
 +N/-S 0.0 +E/-W 0.0 Northing 1338868.25 Easting 3219101.37 Latitude 40.260930 Longitude -104.714910 Slot
 Original Well EleWELL @ 4914.0ft (Original Well Elev)

NOBLE ENERGY INC WELD COUNTY CO



Ludwig H06-31D Pad Sec.6-T3N-R65W
 Ludwig H06-31D
 Noble Ludwig H06-31D Plan #1 (9-14-11)
 16:26, September 14 2011



Azimuths to True North
 Magnetic North: 8.79°
 Magnetic Field
 Strength: 53036.9snT
 Dip Angle: 66.94°
 Date: 9/14/2011
 Model: IGRF2010

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 1320'FNL & 75'FWL	5000.0	-1060.1	-134.0	40.258020	-104.715390	Point
TARGET CIRCLE 1320'FNL & 75'FWL	7024.0	-1060.1	-134.0	40.258020	-104.715390	Circle (Radius: 75.0)
HARDLINE 75'W OF BHL	7479.0	-1160.1	-209.0	40.257746	-104.715659	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	1698.7	17.97	187.20	1684.0	-138.7	-17.5	2.00	187.20	139.8	
4	4255.4	17.97	187.20	4116.0	-921.4	-116.4	0.00	0.00	928.7	
5	5154.1	0.00	0.00	5000.0	-1060.1	-134.0	2.00	180.00	1068.5	TARGET BHL 1320'FNL & 75'FWL
6	7633.1	0.00	0.00	7479.0	-1060.1	-134.0	0.00	0.00	1068.5	



Directional

NOBLE ENERGY INC WELD COUNTY CO

SEC.6-T3N-R65W

Ludwig H06-31D Pad Sec.6-T3N-R65W

Ludwig H06-31D

Wellbore #1

Plan: Noble Ludwig H06-31D Plan #1 (9-14-11)

Standard Planning Report

14 September, 2011



Database:	Landmark	Local Co-ordinate Reference:	Well Ludwig H06-31D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4914.0ft (Original Well Elev)
Project:	SEC.6-T3N-R65W	MD Reference:	WELL @ 4914.0ft (Original Well Elev)
Site:	Ludwig H06-31D Pad Sec.6-T3N-R65W	North Reference:	True
Well:	Ludwig H06-31D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Ludwig H06-31D Plan #1 (9-14-11)		

Project	SEC.6-T3N-R65W, 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						Ludwig H06-31D Pad Sec.6-T3N-R65W											
Site Position:						Northing:			1,338,868.27 ft			Latitude:			40.260930		
From:			Lat/Long			Easting:			3,219,101.37 ft			Longitude:			-104.714910		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.51 °		

Well	Ludwig H06-31D					
Well Position	+N/-S	0.0 ft	Northing:	1,338,868.25 ft	Latitude:	40.260930
	+E/-W	0.0 ft	Easting:	3,219,101.37 ft	Longitude:	-104.714910
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,901.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/14/2011	8.79	66.94	53,037

Design	Noble Ludwig H06-31D Plan #1 (9-14-11)			
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	187.20

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	
1,698.7	17.97	187.20	1,684.0	-138.7	-17.5	2.00	2.00	0.00	187.20	
4,255.4	17.97	187.20	4,116.0	-921.4	-116.4	0.00	0.00	0.00	0.00	
5,154.1	0.00	0.00	5,000.0	-1,060.1	-134.0	2.00	-2.00	0.00	180.00	TARGET BHL 132C
7,633.1	0.00	0.00	7,479.0	-1,060.1	-134.0	0.00	0.00	0.00	0.00	

Database:	Landmark	Local Co-ordinate Reference:	Well Ludwig H06-31D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4914.0ft (Original Well Elev)
Project:	SEC.6-T3N-R65W	MD Reference:	WELL @ 4914.0ft (Original Well Elev)
Site:	Ludwig H06-31D Pad Sec.6-T3N-R65W	North Reference:	True
Well:	Ludwig H06-31D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Ludwig H06-31D Plan #1 (9-14-11)		

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
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	187.20	840.0	-0.3	0.0	0.3	2.00	2.00	0.00
880.0	1.60	187.20	880.0	-1.1	-0.1	1.1	2.00	2.00	0.00
920.0	2.40	187.20	920.0	-2.5	-0.3	2.5	2.00	2.00	0.00
960.0	3.20	187.20	959.9	-4.4	-0.6	4.5	2.00	2.00	0.00
1,000.0	4.00	187.20	999.8	-6.9	-0.9	7.0	2.00	2.00	0.00
1,040.0	4.80	187.20	1,039.7	-10.0	-1.3	10.0	2.00	2.00	0.00
1,080.0	5.60	187.20	1,079.6	-13.6	-1.7	13.7	2.00	2.00	0.00
1,120.0	6.40	187.20	1,119.3	-17.7	-2.2	17.9	2.00	2.00	0.00
1,160.0	7.20	187.20	1,159.1	-22.4	-2.8	22.6	2.00	2.00	0.00
1,200.0	8.00	187.20	1,198.7	-27.7	-3.5	27.9	2.00	2.00	0.00
1,240.0	8.80	187.20	1,238.3	-33.5	-4.2	33.7	2.00	2.00	0.00
1,280.0	9.60	187.20	1,277.8	-39.8	-5.0	40.1	2.00	2.00	0.00
1,320.0	10.40	187.20	1,317.1	-46.7	-5.9	47.1	2.00	2.00	0.00
1,360.0	11.20	187.20	1,356.4	-54.1	-6.8	54.6	2.00	2.00	0.00
1,400.0	12.00	187.20	1,395.6	-62.1	-7.8	62.6	2.00	2.00	0.00
1,440.0	12.80	187.20	1,434.7	-70.6	-8.9	71.2	2.00	2.00	0.00
1,480.0	13.60	187.20	1,473.6	-79.7	-10.1	80.3	2.00	2.00	0.00
1,520.0	14.40	187.20	1,512.4	-89.3	-11.3	90.0	2.00	2.00	0.00
1,560.0	15.20	187.20	1,551.1	-99.4	-12.6	100.2	2.00	2.00	0.00
1,600.0	16.00	187.20	1,589.6	-110.1	-13.9	111.0	2.00	2.00	0.00
1,640.0	16.80	187.20	1,628.0	-121.3	-15.3	122.3	2.00	2.00	0.00
1,680.0	17.60	187.20	1,666.2	-133.0	-16.8	134.1	2.00	2.00	0.00
1,698.7	17.97	187.20	1,684.0	-138.7	-17.5	139.8	2.00	2.00	0.00
1,720.0	17.97	187.20	1,704.3	-145.2	-18.4	146.4	0.00	0.00	0.00
1,760.0	17.97	187.20	1,742.3	-157.5	-19.9	158.7	0.00	0.00	0.00
1,800.0	17.97	187.20	1,780.4	-169.7	-21.4	171.1	0.00	0.00	0.00
1,840.0	17.97	187.20	1,818.4	-182.0	-23.0	183.4	0.00	0.00	0.00
1,880.0	17.97	187.20	1,856.5	-194.2	-24.5	195.8	0.00	0.00	0.00
1,920.0	17.97	187.20	1,894.5	-206.5	-26.1	208.1	0.00	0.00	0.00
1,960.0	17.97	187.20	1,932.6	-218.7	-27.6	220.4	0.00	0.00	0.00
2,000.0	17.97	187.20	1,970.6	-230.9	-29.2	232.8	0.00	0.00	0.00
2,040.0	17.97	187.20	2,008.7	-243.2	-30.7	245.1	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Ludwig H06-31D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4914.0ft (Original Well Elev)
Project:	SEC.6-T3N-R65W	MD Reference:	WELL @ 4914.0ft (Original Well Elev)
Site:	Ludwig H06-31D Pad Sec.6-T3N-R65W	North Reference:	True
Well:	Ludwig H06-31D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Ludwig H06-31D Plan #1 (9-14-11)		

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)
2,080.0	17.97	187.20	2,046.7	-255.4	-32.3	257.5	0.00	0.00	0.00
2,120.0	17.97	187.20	2,084.8	-267.7	-33.8	269.8	0.00	0.00	0.00
2,160.0	17.97	187.20	2,122.8	-279.9	-35.4	282.2	0.00	0.00	0.00
2,200.0	17.97	187.20	2,160.9	-292.2	-36.9	294.5	0.00	0.00	0.00
2,240.0	17.97	187.20	2,198.9	-304.4	-38.5	306.8	0.00	0.00	0.00
2,280.0	17.97	187.20	2,237.0	-316.7	-40.0	319.2	0.00	0.00	0.00
2,320.0	17.97	187.20	2,275.0	-328.9	-41.6	331.5	0.00	0.00	0.00
2,360.0	17.97	187.20	2,313.1	-341.2	-43.1	343.9	0.00	0.00	0.00
2,400.0	17.97	187.20	2,351.1	-353.4	-44.7	356.2	0.00	0.00	0.00
2,440.0	17.97	187.20	2,389.2	-365.6	-46.2	368.6	0.00	0.00	0.00
2,480.0	17.97	187.20	2,427.2	-377.9	-47.8	380.9	0.00	0.00	0.00
2,520.0	17.97	187.20	2,465.3	-390.1	-49.3	393.2	0.00	0.00	0.00
2,560.0	17.97	187.20	2,503.3	-402.4	-50.9	405.6	0.00	0.00	0.00
2,600.0	17.97	187.20	2,541.4	-414.6	-52.4	417.9	0.00	0.00	0.00
2,640.0	17.97	187.20	2,579.4	-426.9	-53.9	430.3	0.00	0.00	0.00
2,680.0	17.97	187.20	2,617.4	-439.1	-55.5	442.6	0.00	0.00	0.00
2,720.0	17.97	187.20	2,655.5	-451.4	-57.0	455.0	0.00	0.00	0.00
2,760.0	17.97	187.20	2,693.5	-463.6	-58.6	467.3	0.00	0.00	0.00
2,800.0	17.97	187.20	2,731.6	-475.9	-60.1	479.6	0.00	0.00	0.00
2,840.0	17.97	187.20	2,769.6	-488.1	-61.7	492.0	0.00	0.00	0.00
2,880.0	17.97	187.20	2,807.7	-500.3	-63.2	504.3	0.00	0.00	0.00
2,920.0	17.97	187.20	2,845.7	-512.6	-64.8	516.7	0.00	0.00	0.00
2,960.0	17.97	187.20	2,883.8	-524.8	-66.3	529.0	0.00	0.00	0.00
3,000.0	17.97	187.20	2,921.8	-537.1	-67.9	541.4	0.00	0.00	0.00
3,040.0	17.97	187.20	2,959.9	-549.3	-69.4	553.7	0.00	0.00	0.00
3,080.0	17.97	187.20	2,997.9	-561.6	-71.0	566.0	0.00	0.00	0.00
3,120.0	17.97	187.20	3,036.0	-573.8	-72.5	578.4	0.00	0.00	0.00
3,160.0	17.97	187.20	3,074.0	-586.1	-74.1	590.7	0.00	0.00	0.00
3,200.0	17.97	187.20	3,112.1	-598.3	-75.6	603.1	0.00	0.00	0.00
3,240.0	17.97	187.20	3,150.1	-610.6	-77.2	615.4	0.00	0.00	0.00
3,280.0	17.97	187.20	3,188.2	-622.8	-78.7	627.8	0.00	0.00	0.00
3,320.0	17.97	187.20	3,226.2	-635.0	-80.3	640.1	0.00	0.00	0.00
3,360.0	17.97	187.20	3,264.3	-647.3	-81.8	652.4	0.00	0.00	0.00
3,400.0	17.97	187.20	3,302.3	-659.5	-83.3	664.8	0.00	0.00	0.00
3,440.0	17.97	187.20	3,340.4	-671.8	-84.9	677.1	0.00	0.00	0.00
3,480.0	17.97	187.20	3,378.4	-684.0	-86.4	689.5	0.00	0.00	0.00
3,520.0	17.97	187.20	3,416.5	-696.3	-88.0	701.8	0.00	0.00	0.00
3,560.0	17.97	187.20	3,454.5	-708.5	-89.5	714.2	0.00	0.00	0.00
3,600.0	17.97	187.20	3,492.6	-720.8	-91.1	726.5	0.00	0.00	0.00
3,640.0	17.97	187.20	3,530.6	-733.0	-92.6	738.8	0.00	0.00	0.00
3,680.0	17.97	187.20	3,568.6	-745.3	-94.2	751.2	0.00	0.00	0.00
3,720.0	17.97	187.20	3,606.7	-757.5	-95.7	763.5	0.00	0.00	0.00
3,760.0	17.97	187.20	3,644.7	-769.7	-97.3	775.9	0.00	0.00	0.00
3,800.0	17.97	187.20	3,682.8	-782.0	-98.8	788.2	0.00	0.00	0.00
3,840.0	17.97	187.20	3,720.8	-794.2	-100.4	800.6	0.00	0.00	0.00
3,880.0	17.97	187.20	3,758.9	-806.5	-101.9	812.9	0.00	0.00	0.00
3,920.0	17.97	187.20	3,796.9	-818.7	-103.5	825.2	0.00	0.00	0.00
3,960.0	17.97	187.20	3,835.0	-831.0	-105.0	837.6	0.00	0.00	0.00
4,000.0	17.97	187.20	3,873.0	-843.2	-106.6	849.9	0.00	0.00	0.00
4,040.0	17.97	187.20	3,911.1	-855.5	-108.1	862.3	0.00	0.00	0.00
4,080.0	17.97	187.20	3,949.1	-867.7	-109.7	874.6	0.00	0.00	0.00
4,120.0	17.97	187.20	3,987.2	-880.0	-111.2	887.0	0.00	0.00	0.00
4,160.0	17.97	187.20	4,025.2	-892.2	-112.8	899.3	0.00	0.00	0.00
4,200.0	17.97	187.20	4,063.3	-904.4	-114.3	911.6	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Ludwig H06-31D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4914.0ft (Original Well Elev)
Project:	SEC.6-T3N-R65W	MD Reference:	WELL @ 4914.0ft (Original Well Elev)
Site:	Ludwig H06-31D Pad Sec.6-T3N-R65W	North Reference:	True
Well:	Ludwig H06-31D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Ludwig H06-31D Plan #1 (9-14-11)		

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)
4,240.0	17.97	187.20	4,101.3	-916.7	-115.8	924.0	0.00	0.00	0.00
4,255.4	17.97	187.20	4,116.0	-921.4	-116.4	928.7	0.00	0.00	0.00
4,280.0	17.48	187.20	4,139.4	-928.8	-117.4	936.2	2.00	-2.00	0.00
4,320.0	16.68	187.20	4,177.6	-940.5	-118.9	948.0	2.00	-2.00	0.00
4,360.0	15.88	187.20	4,216.0	-951.6	-120.3	959.2	2.00	-2.00	0.00
4,400.0	15.08	187.20	4,254.6	-962.2	-121.6	969.9	2.00	-2.00	0.00
4,440.0	14.28	187.20	4,293.3	-972.3	-122.9	980.0	2.00	-2.00	0.00
4,480.0	13.48	187.20	4,332.1	-981.8	-124.1	989.6	2.00	-2.00	0.00
4,520.0	12.68	187.20	4,371.1	-990.8	-125.2	998.7	2.00	-2.00	0.00
4,560.0	11.88	187.20	4,410.2	-999.2	-126.3	1,007.2	2.00	-2.00	0.00
4,600.0	11.08	187.20	4,449.4	-1,007.1	-127.3	1,015.1	2.00	-2.00	0.00
4,640.0	10.28	187.20	4,488.7	-1,014.5	-128.2	1,022.5	2.00	-2.00	0.00
4,680.0	9.48	187.20	4,528.1	-1,021.3	-129.1	1,029.4	2.00	-2.00	0.00
4,720.0	8.68	187.20	4,567.6	-1,027.5	-129.9	1,035.7	2.00	-2.00	0.00
4,760.0	7.88	187.20	4,607.1	-1,033.3	-130.6	1,041.5	2.00	-2.00	0.00
4,800.0	7.08	187.20	4,646.8	-1,038.4	-131.2	1,046.7	2.00	-2.00	0.00
4,840.0	6.28	187.20	4,686.5	-1,043.0	-131.8	1,051.3	2.00	-2.00	0.00
4,880.0	5.48	187.20	4,726.3	-1,047.1	-132.3	1,055.4	2.00	-2.00	0.00
4,920.0	4.68	187.20	4,766.2	-1,050.6	-132.8	1,059.0	2.00	-2.00	0.00
4,960.0	3.88	187.20	4,806.1	-1,053.6	-133.1	1,062.0	2.00	-2.00	0.00
5,000.0	3.08	187.20	4,846.0	-1,056.0	-133.5	1,064.4	2.00	-2.00	0.00
5,040.0	2.28	187.20	4,885.9	-1,057.9	-133.7	1,066.3	2.00	-2.00	0.00
5,080.0	1.48	187.20	4,925.9	-1,059.2	-133.9	1,067.6	2.00	-2.00	0.00
5,120.0	0.68	187.20	4,965.9	-1,059.9	-133.9	1,068.3	2.00	-2.00	0.00
5,154.1	0.00	0.00	5,000.0	-1,060.1	-134.0	1,068.5	2.00	-2.00	0.00
TARGET BHL 1320'FNL & 75'FWL									
5,160.0	0.00	0.00	5,005.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
5,200.0	0.00	0.00	5,045.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
5,240.0	0.00	0.00	5,085.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
5,280.0	0.00	0.00	5,125.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
5,320.0	0.00	0.00	5,165.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
5,360.0	0.00	0.00	5,205.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
5,400.0	0.00	0.00	5,245.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
5,440.0	0.00	0.00	5,285.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
5,480.0	0.00	0.00	5,325.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
5,520.0	0.00	0.00	5,365.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
5,560.0	0.00	0.00	5,405.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
5,600.0	0.00	0.00	5,445.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
5,640.0	0.00	0.00	5,485.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
5,680.0	0.00	0.00	5,525.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
5,720.0	0.00	0.00	5,565.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
5,760.0	0.00	0.00	5,605.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
5,800.0	0.00	0.00	5,645.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
5,840.0	0.00	0.00	5,685.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
5,880.0	0.00	0.00	5,725.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
5,920.0	0.00	0.00	5,765.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
5,960.0	0.00	0.00	5,805.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
6,000.0	0.00	0.00	5,845.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
6,040.0	0.00	0.00	5,885.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
6,080.0	0.00	0.00	5,925.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
6,120.0	0.00	0.00	5,965.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
6,160.0	0.00	0.00	6,005.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
6,200.0	0.00	0.00	6,045.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
6,240.0	0.00	0.00	6,085.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Ludwig H06-31D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4914.0ft (Original Well Elev)
Project:	SEC.6-T3N-R65W	MD Reference:	WELL @ 4914.0ft (Original Well Elev)
Site:	Ludwig H06-31D Pad Sec.6-T3N-R65W	North Reference:	True
Well:	Ludwig H06-31D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Ludwig H06-31D Plan #1 (9-14-11)		

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)
6,280.0	0.00	0.00	6,125.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
6,320.0	0.00	0.00	6,165.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
6,360.0	0.00	0.00	6,205.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
6,400.0	0.00	0.00	6,245.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
6,440.0	0.00	0.00	6,285.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
6,480.0	0.00	0.00	6,325.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
6,520.0	0.00	0.00	6,365.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
6,560.0	0.00	0.00	6,405.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
6,600.0	0.00	0.00	6,445.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
6,640.0	0.00	0.00	6,485.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
6,680.0	0.00	0.00	6,525.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
6,720.0	0.00	0.00	6,565.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
6,760.0	0.00	0.00	6,605.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
6,800.0	0.00	0.00	6,645.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
6,840.0	0.00	0.00	6,685.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
6,880.0	0.00	0.00	6,725.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
6,920.0	0.00	0.00	6,765.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
6,960.0	0.00	0.00	6,805.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
7,000.0	0.00	0.00	6,845.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
7,040.0	0.00	0.00	6,885.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
7,080.0	0.00	0.00	6,925.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
7,120.0	0.00	0.00	6,965.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
7,160.0	0.00	0.00	7,005.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
7,178.1	0.00	0.00	7,024.0	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
NIOBRARA - TARGET CIRCLE 1320'FNL & 75'FWL									
7,200.0	0.00	0.00	7,045.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
7,240.0	0.00	0.00	7,085.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
7,280.0	0.00	0.00	7,125.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
7,320.0	0.00	0.00	7,165.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
7,360.0	0.00	0.00	7,205.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
7,400.0	0.00	0.00	7,245.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
7,440.0	0.00	0.00	7,285.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
7,480.0	0.00	0.00	7,325.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
7,483.1	0.00	0.00	7,329.0	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
CODELL									
7,520.0	0.00	0.00	7,365.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
7,560.0	0.00	0.00	7,405.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
7,600.0	0.00	0.00	7,445.9	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
7,633.1	0.00	0.00	7,479.0	-1,060.1	-134.0	1,068.5	0.00	0.00	0.00
HARDLINE 75'W OF BHL									

Database:	Landmark	Local Co-ordinate Reference:	Well Ludwig H06-31D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4914.0ft (Original Well Elev)
Project:	SEC.6-T3N-R65W	MD Reference:	WELL @ 4914.0ft (Original Well Elev)
Site:	Ludwig H06-31D Pad Sec.6-T3N-R65W	North Reference:	True
Well:	Ludwig H06-31D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Ludwig H06-31D Plan #1 (9-14-11)		

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 CIRCLE 132'	0.00	0.00	7,024.0	-1,060.1	-134.0	1,337,807.05	3,218,976.80	40.258020	-104.715390
- plan hits target center									
- Circle (radius 75.0)									
HARDLINE 75'W OF I	0.00	0.00	7,479.0	-1,160.1	-209.0	1,337,706.41	3,218,902.66	40.257746	-104.715659
- plan misses target center by 125.0ft at 7633.1ft MD (7479.0 TVD, -1060.1 N, -134.0 E)									
- Polygon									
Point 1			7,479.0	0.0	0.0	1,337,706.41	3,218,902.66		
Point 2			7,479.0	200.0	0.0	1,337,906.39	3,218,900.89		
Point 3			7,479.0	0.0	0.0	1,337,706.41	3,218,902.66		
TARGET BHL 1320'F	0.00	0.00	5,000.0	-1,060.1	-134.0	1,337,807.05	3,218,976.80	40.258020	-104.715390
- plan hits target center									
- 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 (°)
7,178.1	7,024.0	NIOBRARA		0.00	
7,483.1	7,329.0	CODELL		0.00	