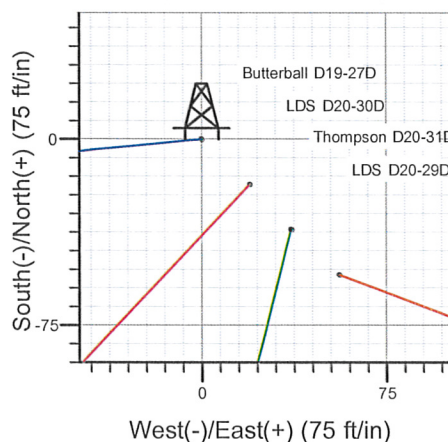
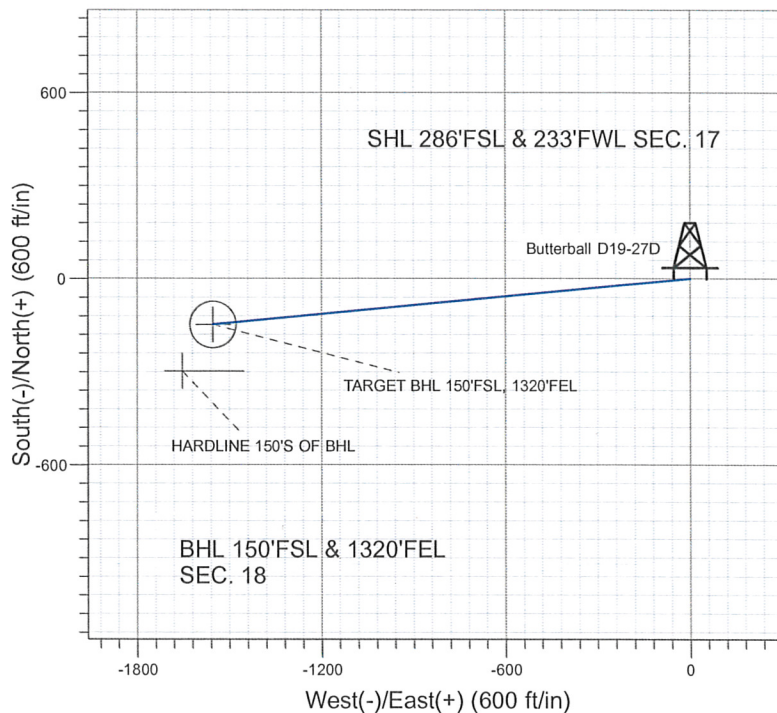
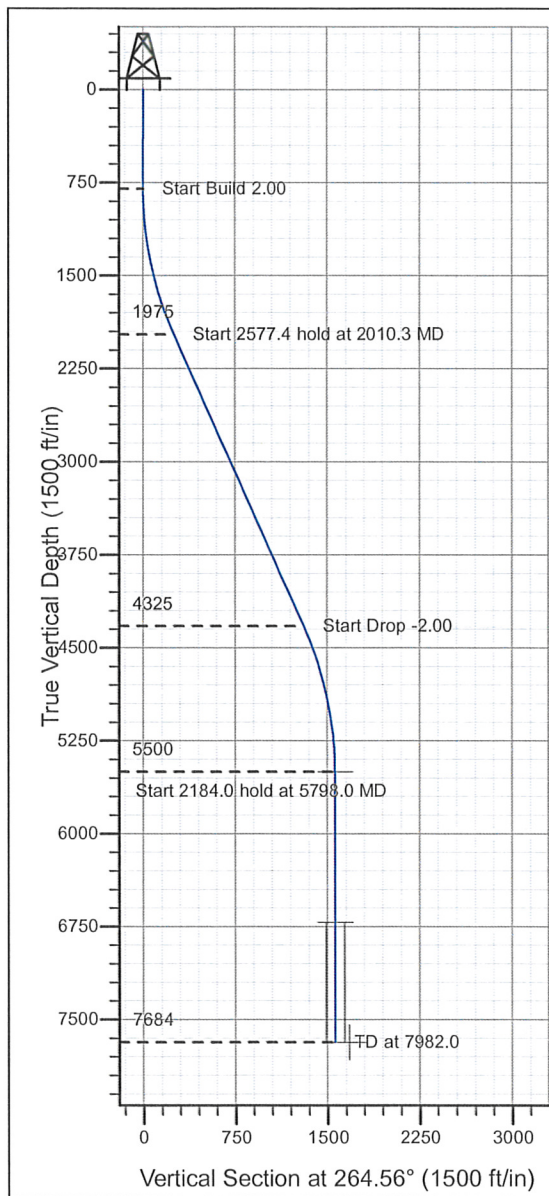


## Well Name:Butterball D19-27D

Surface Location: LDS D20-29D Pad Sec.17-T3N-R64W  
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone  
 Ground Elevation: 4763.0  
 +N/-S+E/-W Northing Easting Latitude Longitude Slot  
 0.0 0.0 1323891.52 3255904.31 40° 13' 7.860 N 104° 35' 0.960 W  
 Original Well Elev WELL @ 4776.0ft (Original Well Elev)

## NOBLE ENERGY INC WELD COUNTY CO



Azimuths to True North  
 Magnetic North: 8.91°  
 Magnetic Field  
 Strength: 53233.1snT  
 Dip Angle: 66.99°  
 Date: 12/16/2009  
 Model: IGRF200510

### WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 150'FSL, 1320'FEL	5500.0	-148.0	-1553.5	40° 13' 6.397 N	104° 35' 20.985 W	Point
TARGET CIRCLE 150'FSL, 1320'FEL	6714.0	-148.0	-1553.5	40° 13' 6.397 N	104° 35' 20.986 W	Circle (Radius: 75.0)
HARDLINE 150'S OF BHL	7684.0	-298.0	-1653.5	40° 13' 4.915 N	104° 35' 22.275 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	2010.3	24.21	264.56	1974.6	-23.9	-250.7	2.00	264.56	251.9	
4	4587.7	24.21	264.56	4325.4	-124.1	-1302.7	0.00	0.00	1308.6	
5	5798.0	0.00	0.00	5500.0	-148.0	-1553.5	2.00	180.00	1560.5	TARGET BHL 150'FSL, 1320'FEL
6	7982.0	0.00	0.00	7684.0	-148.0	-1553.5	0.00	0.00	1560.5	



## **Directional**

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

**SEC.17-T3N-R64W**

**LDS D20-29D Pad Sec.17-T3N-R64W**

**Butterball D19-27D**

**Wellbore #1**

**Plan: Noble Butterball D19-27D Plan #1 (12-16-09)**

### **Standard Planning Report**

**16 December, 2009**





Database:	EDM den0-adp01 Server Data	Local Co-ordinate Reference:	Well Butterball D19-27D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4776.0ft (Original Well Elev)
Project:	SEC.17-T3N-R64W	MD Reference:	WELL @ 4776.0ft (Original Well Elev)
Site:	LDS D20-29D Pad Sec.17-T3N-R64W	North Reference:	True
Well:	Butterball D19-27D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Butterball D19-27D Plan #1 (12-16-09)		

Project	SEC.17-T3N-R64W, Weld County, Colorado		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	LDS D20-29D Pad Sec.17-T3N-R64W				
Site Position:		Northing:	1,323,837.46 ft	Latitude:	40° 13' 7.320 N
From:	Lat/Long	Easting:	3,255,960.73 ft	Longitude:	104° 35' 0.240 W
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.59 °

Well	Butterball D19-27D					
Well Position	+N/-S	54.6 ft	Northing:	1,323,891.52 ft	Latitude:	40° 13' 7.860 N
	+E/-W	-55.9 ft	Easting:	3,255,904.31 ft	Longitude:	104° 35' 0.960 W
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,763.0 ft	

Wellbore	Wellbore #1
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/16/2009	8.92	66.99	53,233

Design	Noble Butterball D19-27D Plan #1 (12-16-09)
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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	264.56

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	
2,010.3	24.21	264.56	1,974.6	-23.9	-250.7	2.00	2.00	0.00	264.56	
4,587.7	24.21	264.56	4,325.4	-124.1	-1,302.7	0.00	0.00	0.00	0.00	
5,798.0	0.00	0.00	5,500.0	-148.0	-1,553.5	2.00	-2.00	0.00	180.00	TARGET BHL 150'I
7,982.0	0.00	0.00	7,684.0	-148.0	-1,553.5	0.00	0.00	0.00	0.00	

Database:	EDM den0-adp01 Server Data	Local Co-ordinate Reference:	Well Butterball D19-27D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4776.0ft (Original Well Elev)
Project:	SEC.17-T3N-R64W	MD Reference:	WELL @ 4776.0ft (Original Well Elev)
Site:	LDS D20-29D Pad Sec.17-T3N-R64W	North Reference:	True
Well:	Butterball D19-27D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Butterball D19-27D Plan #1 (12-16-09)		

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	0.80	264.56	840.0	0.0	-0.3	0.3	2.00	2.00	0.00
880.0	1.60	264.56	880.0	-0.1	-1.1	1.1	2.00	2.00	0.00
920.0	2.40	264.56	920.0	-0.2	-2.5	2.5	2.00	2.00	0.00
960.0	3.20	264.56	959.9	-0.4	-4.4	4.5	2.00	2.00	0.00
1,000.0	4.00	264.56	999.8	-0.7	-6.9	7.0	2.00	2.00	0.00
1,040.0	4.80	264.56	1,039.7	-1.0	-10.0	10.0	2.00	2.00	0.00
1,080.0	5.60	264.56	1,079.6	-1.3	-13.6	13.7	2.00	2.00	0.00
1,120.0	6.40	264.56	1,119.3	-1.7	-17.8	17.9	2.00	2.00	0.00
1,160.0	7.20	264.56	1,159.1	-2.1	-22.5	22.6	2.00	2.00	0.00
1,200.0	8.00	264.56	1,198.7	-2.6	-27.8	27.9	2.00	2.00	0.00
1,240.0	8.80	264.56	1,238.3	-3.2	-33.6	33.7	2.00	2.00	0.00
1,280.0	9.60	264.56	1,277.8	-3.8	-39.9	40.1	2.00	2.00	0.00
1,320.0	10.40	264.56	1,317.1	-4.5	-46.9	47.1	2.00	2.00	0.00
1,360.0	11.20	264.56	1,356.4	-5.2	-54.3	54.6	2.00	2.00	0.00
1,400.0	12.00	264.56	1,395.6	-5.9	-62.3	62.6	2.00	2.00	0.00
1,440.0	12.80	264.56	1,434.7	-6.8	-70.9	71.2	2.00	2.00	0.00
1,480.0	13.60	264.56	1,473.6	-7.6	-80.0	80.3	2.00	2.00	0.00
1,520.0	14.40	264.56	1,512.4	-8.5	-89.6	90.0	2.00	2.00	0.00
1,560.0	15.20	264.56	1,551.1	-9.5	-99.8	100.2	2.00	2.00	0.00
1,600.0	16.00	264.56	1,589.6	-10.5	-110.5	111.0	2.00	2.00	0.00
1,640.0	16.80	264.56	1,628.0	-11.6	-121.7	122.3	2.00	2.00	0.00
1,680.0	17.60	264.56	1,666.2	-12.7	-133.5	134.1	2.00	2.00	0.00
1,720.0	18.40	264.56	1,704.3	-13.9	-145.8	146.5	2.00	2.00	0.00
1,760.0	19.20	264.56	1,742.1	-15.1	-158.6	159.3	2.00	2.00	0.00
1,800.0	20.00	264.56	1,779.8	-16.4	-172.0	172.8	2.00	2.00	0.00
1,840.0	20.80	264.56	1,817.3	-17.7	-185.9	186.7	2.00	2.00	0.00
1,880.0	21.60	264.56	1,854.6	-19.1	-200.3	201.2	2.00	2.00	0.00
1,920.0	22.40	264.56	1,891.7	-20.5	-215.2	216.2	2.00	2.00	0.00
1,960.0	23.20	264.56	1,928.6	-22.0	-230.6	231.7	2.00	2.00	0.00
2,000.0	24.00	264.56	1,965.2	-23.5	-246.6	247.7	2.00	2.00	0.00
2,010.3	24.21	264.56	1,974.6	-23.9	-250.7	251.9	2.00	2.00	0.00
2,040.0	24.21	264.56	2,001.7	-25.0	-262.9	264.1	0.00	0.00	0.00
2,080.0	24.21	264.56	2,038.2	-26.6	-279.2	280.5	0.00	0.00	0.00



Database:	EDM den0-adp01 Server Data	Local Co-ordinate Reference:	Well Butterball D19-27D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4776.0ft (Original Well Elev)
Project:	SEC.17-T3N-R64W	MD Reference:	WELL @ 4776.0ft (Original Well Elev)
Site:	LDS D20-29D Pad Sec.17-T3N-R64W	North Reference:	True
Well:	Butterball D19-27D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Butterball D19-27D Plan #1 (12-16-09)		

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	24.21	264.56	2,074.7	-28.2	-295.5	296.9	0.00	0.00	0.00
2,160.0	24.21	264.56	2,111.2	-29.7	-311.8	313.3	0.00	0.00	0.00
2,200.0	24.21	264.56	2,147.6	-31.3	-328.2	329.7	0.00	0.00	0.00
2,240.0	24.21	264.56	2,184.1	-32.8	-344.5	346.1	0.00	0.00	0.00
2,280.0	24.21	264.56	2,220.6	-34.4	-360.8	362.5	0.00	0.00	0.00
2,320.0	24.21	264.56	2,257.1	-35.9	-377.2	378.9	0.00	0.00	0.00
2,360.0	24.21	264.56	2,293.6	-37.5	-393.5	395.3	0.00	0.00	0.00
2,400.0	24.21	264.56	2,330.1	-39.0	-409.8	411.7	0.00	0.00	0.00
2,440.0	24.21	264.56	2,366.5	-40.6	-426.1	428.1	0.00	0.00	0.00
2,480.0	24.21	264.56	2,403.0	-42.2	-442.5	444.5	0.00	0.00	0.00
2,520.0	24.21	264.56	2,439.5	-43.7	-458.8	460.9	0.00	0.00	0.00
2,560.0	24.21	264.56	2,476.0	-45.3	-475.1	477.3	0.00	0.00	0.00
2,600.0	24.21	264.56	2,512.5	-46.8	-491.4	493.7	0.00	0.00	0.00
2,640.0	24.21	264.56	2,549.0	-48.4	-507.8	510.1	0.00	0.00	0.00
2,680.0	24.21	264.56	2,585.4	-49.9	-524.1	526.5	0.00	0.00	0.00
2,720.0	24.21	264.56	2,621.9	-51.5	-540.4	542.9	0.00	0.00	0.00
2,760.0	24.21	264.56	2,658.4	-53.0	-556.7	559.3	0.00	0.00	0.00
2,800.0	24.21	264.56	2,694.9	-54.6	-573.1	575.7	0.00	0.00	0.00
2,840.0	24.21	264.56	2,731.4	-56.2	-589.4	592.1	0.00	0.00	0.00
2,880.0	24.21	264.56	2,767.9	-57.7	-605.7	608.5	0.00	0.00	0.00
2,920.0	24.21	264.56	2,804.3	-59.3	-622.0	624.9	0.00	0.00	0.00
2,960.0	24.21	264.56	2,840.8	-60.8	-638.4	641.3	0.00	0.00	0.00
3,000.0	24.21	264.56	2,877.3	-62.4	-654.7	657.7	0.00	0.00	0.00
3,040.0	24.21	264.56	2,913.8	-63.9	-671.0	674.1	0.00	0.00	0.00
3,080.0	24.21	264.56	2,950.3	-65.5	-687.3	690.5	0.00	0.00	0.00
3,120.0	24.21	264.56	2,986.8	-67.0	-703.7	706.9	0.00	0.00	0.00
3,160.0	24.21	264.56	3,023.2	-68.6	-720.0	723.3	0.00	0.00	0.00
3,200.0	24.21	264.56	3,059.7	-70.2	-736.3	739.7	0.00	0.00	0.00
3,240.0	24.21	264.56	3,096.2	-71.7	-752.7	756.1	0.00	0.00	0.00
3,280.0	24.21	264.56	3,132.7	-73.3	-769.0	772.5	0.00	0.00	0.00
3,320.0	24.21	264.56	3,169.2	-74.8	-785.3	788.9	0.00	0.00	0.00
3,360.0	24.21	264.56	3,205.7	-76.4	-801.6	805.3	0.00	0.00	0.00
3,400.0	24.21	264.56	3,242.1	-77.9	-818.0	821.7	0.00	0.00	0.00
3,440.0	24.21	264.56	3,278.6	-79.5	-834.3	838.1	0.00	0.00	0.00
3,480.0	24.21	264.56	3,315.1	-81.1	-850.6	854.5	0.00	0.00	0.00
3,520.0	24.21	264.56	3,351.6	-82.6	-866.9	870.9	0.00	0.00	0.00
3,560.0	24.21	264.56	3,388.1	-84.2	-883.3	887.3	0.00	0.00	0.00
3,600.0	24.21	264.56	3,424.6	-85.7	-899.6	903.7	0.00	0.00	0.00
3,640.0	24.21	264.56	3,461.0	-87.3	-915.9	920.1	0.00	0.00	0.00
3,680.0	24.21	264.56	3,497.5	-88.8	-932.2	936.5	0.00	0.00	0.00
3,720.0	24.21	264.56	3,534.0	-90.4	-948.6	952.9	0.00	0.00	0.00
3,760.0	24.21	264.56	3,570.5	-91.9	-964.9	969.3	0.00	0.00	0.00
3,800.0	24.21	264.56	3,607.0	-93.5	-981.2	985.7	0.00	0.00	0.00
3,840.0	24.21	264.56	3,643.5	-95.1	-997.5	1,002.1	0.00	0.00	0.00
3,880.0	24.21	264.56	3,679.9	-96.6	-1,013.9	1,018.5	0.00	0.00	0.00
3,920.0	24.21	264.56	3,716.4	-98.2	-1,030.2	1,034.9	0.00	0.00	0.00
3,960.0	24.21	264.56	3,752.9	-99.7	-1,046.5	1,051.3	0.00	0.00	0.00
4,000.0	24.21	264.56	3,789.4	-101.3	-1,062.9	1,067.7	0.00	0.00	0.00
4,040.0	24.21	264.56	3,825.9	-102.8	-1,079.2	1,084.1	0.00	0.00	0.00
4,080.0	24.21	264.56	3,862.4	-104.4	-1,095.5	1,100.5	0.00	0.00	0.00
4,120.0	24.21	264.56	3,898.8	-105.9	-1,111.8	1,116.9	0.00	0.00	0.00
4,160.0	24.21	264.56	3,935.3	-107.5	-1,128.2	1,133.3	0.00	0.00	0.00
4,200.0	24.21	264.56	3,971.8	-109.1	-1,144.5	1,149.7	0.00	0.00	0.00
4,240.0	24.21	264.56	4,008.3	-110.6	-1,160.8	1,166.1	0.00	0.00	0.00

Database:	EDM den0-adp01 Server Data	Local Co-ordinate Reference:	Well Butterball D19-27D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4776.0ft (Original Well Elev)
Project:	SEC.17-T3N-R64W	MD Reference:	WELL @ 4776.0ft (Original Well Elev)
Site:	LDS D20-29D Pad Sec.17-T3N-R64W	North Reference:	True
Well:	Butterball D19-27D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Butterball D19-27D Plan #1 (12-16-09)		

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)
4,280.0	24.21	264.56	4,044.8	-112.2	-1,177.1	1,182.5	0.00	0.00	0.00
4,320.0	24.21	264.56	4,081.3	-113.7	-1,193.5	1,198.9	0.00	0.00	0.00
4,360.0	24.21	264.56	4,117.7	-115.3	-1,209.8	1,215.3	0.00	0.00	0.00
4,400.0	24.21	264.56	4,154.2	-116.8	-1,226.1	1,231.7	0.00	0.00	0.00
4,440.0	24.21	264.56	4,190.7	-118.4	-1,242.4	1,248.1	0.00	0.00	0.00
4,480.0	24.21	264.56	4,227.2	-119.9	-1,258.8	1,264.5	0.00	0.00	0.00
4,520.0	24.21	264.56	4,263.7	-121.5	-1,275.1	1,280.9	0.00	0.00	0.00
4,560.0	24.21	264.56	4,300.2	-123.1	-1,291.4	1,297.3	0.00	0.00	0.00
4,587.7	24.21	264.56	4,325.4	-124.1	-1,302.7	1,308.6	0.00	0.00	0.00
4,600.0	23.96	264.56	4,336.6	-124.6	-1,307.7	1,313.6	2.00	-2.00	0.00
4,640.0	23.16	264.56	4,373.3	-126.1	-1,323.6	1,329.6	2.00	-2.00	0.00
4,680.0	22.36	264.56	4,410.2	-127.6	-1,339.0	1,345.1	2.00	-2.00	0.00
4,720.0	21.56	264.56	4,447.3	-129.0	-1,353.9	1,360.1	2.00	-2.00	0.00
4,760.0	20.76	264.56	4,484.6	-130.4	-1,368.3	1,374.5	2.00	-2.00	0.00
4,800.0	19.96	264.56	4,522.1	-131.7	-1,382.2	1,388.4	2.00	-2.00	0.00
4,840.0	19.16	264.56	4,559.8	-133.0	-1,395.5	1,401.8	2.00	-2.00	0.00
4,880.0	18.36	264.56	4,597.7	-134.2	-1,408.3	1,414.7	2.00	-2.00	0.00
4,920.0	17.56	264.56	4,635.7	-135.4	-1,420.6	1,427.0	2.00	-2.00	0.00
4,960.0	16.76	264.56	4,673.9	-136.5	-1,432.3	1,438.8	2.00	-2.00	0.00
5,000.0	15.96	264.56	4,712.3	-137.5	-1,443.5	1,450.1	2.00	-2.00	0.00
5,040.0	15.16	264.56	4,750.9	-138.6	-1,454.2	1,460.8	2.00	-2.00	0.00
5,080.0	14.36	264.56	4,789.5	-139.5	-1,464.4	1,471.0	2.00	-2.00	0.00
5,120.0	13.56	264.56	4,828.4	-140.4	-1,474.0	1,480.6	2.00	-2.00	0.00
5,160.0	12.76	264.56	4,867.3	-141.3	-1,483.0	1,489.7	2.00	-2.00	0.00
5,200.0	11.96	264.56	4,906.4	-142.1	-1,491.6	1,498.3	2.00	-2.00	0.00
5,240.0	11.16	264.56	4,945.6	-142.9	-1,499.5	1,506.3	2.00	-2.00	0.00
5,280.0	10.36	264.56	4,984.9	-143.6	-1,507.0	1,513.8	2.00	-2.00	0.00
5,320.0	9.56	264.56	5,024.3	-144.2	-1,513.9	1,520.7	2.00	-2.00	0.00
5,360.0	8.76	264.56	5,063.7	-144.9	-1,520.2	1,527.1	2.00	-2.00	0.00
5,400.0	7.96	264.56	5,103.3	-145.4	-1,526.0	1,532.9	2.00	-2.00	0.00
5,440.0	7.16	264.56	5,143.0	-145.9	-1,531.2	1,538.2	2.00	-2.00	0.00
5,480.0	6.36	264.56	5,182.7	-146.3	-1,535.9	1,542.9	2.00	-2.00	0.00
5,520.0	5.56	264.56	5,222.5	-146.7	-1,540.0	1,547.0	2.00	-2.00	0.00
5,560.0	4.76	264.56	5,262.3	-147.1	-1,543.6	1,550.6	2.00	-2.00	0.00
5,600.0	3.96	264.56	5,302.2	-147.4	-1,546.6	1,553.7	2.00	-2.00	0.00
5,640.0	3.16	264.56	5,342.1	-147.6	-1,549.1	1,556.1	2.00	-2.00	0.00
5,680.0	2.36	264.56	5,382.1	-147.8	-1,551.0	1,558.1	2.00	-2.00	0.00
5,720.0	1.56	264.56	5,422.1	-147.9	-1,552.4	1,559.4	2.00	-2.00	0.00
5,760.0	0.76	264.56	5,462.0	-148.0	-1,553.2	1,560.2	2.00	-2.00	0.00
5,798.0	0.00	0.00	5,500.0	-148.0	-1,553.5	1,560.5	2.00	-2.00	251.43
TARGET BHL 150'FSL, 1320'FEL									
5,800.0	0.00	0.00	5,502.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
5,840.0	0.00	0.00	5,542.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
5,880.0	0.00	0.00	5,582.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
5,920.0	0.00	0.00	5,622.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
5,960.0	0.00	0.00	5,662.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
6,000.0	0.00	0.00	5,702.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
6,040.0	0.00	0.00	5,742.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
6,080.0	0.00	0.00	5,782.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
6,120.0	0.00	0.00	5,822.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
6,160.0	0.00	0.00	5,862.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
6,200.0	0.00	0.00	5,902.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
6,240.0	0.00	0.00	5,942.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00



Database: EDM den0-adp01 Server Data  
 Company: NOBLE ENERGY INC WELD COUNTY CO  
 Project: SEC.17-T3N-R64W  
 Site: LDS D20-29D Pad Sec.17-T3N-R64W  
 Well: Butterball D19-27D  
 Wellbore: Wellbore #1  
 Design: Noble Butterball D19-27D Plan #1 (12-16-09)

Local Co-ordinate Reference: Well Butterball D19-27D  
 TVD Reference: WELL @ 4776.0ft (Original Well Elev)  
 MD Reference: WELL @ 4776.0ft (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	5,982.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
6,320.0	0.00	0.00	6,022.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
6,360.0	0.00	0.00	6,062.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
6,400.0	0.00	0.00	6,102.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
6,440.0	0.00	0.00	6,142.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
6,480.0	0.00	0.00	6,182.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
6,520.0	0.00	0.00	6,222.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
6,560.0	0.00	0.00	6,262.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
6,600.0	0.00	0.00	6,302.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
6,640.0	0.00	0.00	6,342.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
6,680.0	0.00	0.00	6,382.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
6,720.0	0.00	0.00	6,422.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
6,760.0	0.00	0.00	6,462.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
6,800.0	0.00	0.00	6,502.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
6,840.0	0.00	0.00	6,542.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
6,880.0	0.00	0.00	6,582.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
6,920.0	0.00	0.00	6,622.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
6,960.0	0.00	0.00	6,662.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
7,000.0	0.00	0.00	6,702.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
7,012.0	0.00	0.00	6,714.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
<b>NIORARA - TARGET CIRCLE 150'FSL, 1320'FEL</b>									
7,040.0	0.00	0.00	6,742.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
7,080.0	0.00	0.00	6,782.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
7,120.0	0.00	0.00	6,822.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
7,160.0	0.00	0.00	6,862.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
7,200.0	0.00	0.00	6,902.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
7,240.0	0.00	0.00	6,942.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
7,280.0	0.00	0.00	6,982.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
7,314.0	0.00	0.00	7,016.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
<b>CODELL</b>									
7,320.0	0.00	0.00	7,022.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
7,360.0	0.00	0.00	7,062.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
7,400.0	0.00	0.00	7,102.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
7,440.0	0.00	0.00	7,142.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
7,480.0	0.00	0.00	7,182.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
7,520.0	0.00	0.00	7,222.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
7,560.0	0.00	0.00	7,262.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
7,600.0	0.00	0.00	7,302.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
7,640.0	0.00	0.00	7,342.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
7,680.0	0.00	0.00	7,382.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
7,720.0	0.00	0.00	7,422.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
7,760.0	0.00	0.00	7,462.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
7,782.0	0.00	0.00	7,484.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
<b>J-SAND</b>									
7,800.0	0.00	0.00	7,502.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
7,840.0	0.00	0.00	7,542.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
7,880.0	0.00	0.00	7,582.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
7,920.0	0.00	0.00	7,622.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
7,960.0	0.00	0.00	7,662.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
7,982.0	0.00	0.00	7,684.0	-148.0	-1,553.5	1,560.5	0.00	0.00	0.00
<b>HARDLINE 150'S OF BHL</b>									

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 Company: NOBLE ENERGY INC WELD COUNTY CO  
 Project: SEC.17-T3N-R64W  
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 Design: Noble Butterball D19-27D Plan #1 (12-16-09)

Local Co-ordinate Reference: Well Butterball D19-27D  
 TVD Reference: WELL @ 4776.0ft (Original Well Elev)  
 MD Reference: WELL @ 4776.0ft (Original Well Elev)  
 North Reference: True  
 Survey Calculation Method: Minimum Curvature

**Targets**

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
TARGET CIRCLE 15C - plan misses target center by 0.1ft at 7012.0ft MD (6714.0 TVD, -148.0 N, -1553.5 E) - Circle (radius 75.0)	0.00	0.00	6,714.0	-148.0	-1,553.5	1,323,727.48	3,254,352.50	40° 13' 6.397 N	104° 35' 20.986 W
TARGET BHL 150'FS - plan hits target center - Point	0.00	0.00	5,500.0	-148.0	-1,553.5	1,323,727.46	3,254,352.54	40° 13' 6.397 N	104° 35' 20.985 W
HARDLINE 150'S OF - plan misses target center by 180.3ft at 7982.0ft MD (7684.0 TVD, -148.0 N, -1553.5 E) - Polygon	0.00	0.00	7,684.0	-298.0	-1,653.5	1,323,576.46	3,254,254.06	40° 13' 4.915 N	104° 35' 22.275 W
Point 1			7,684.0	0.0	0.0	1,323,576.46	3,254,254.06		
Point 2			7,684.0	0.0	200.0	1,323,578.53	3,254,454.04		

**Formations**

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,012.0	6,714.0	NIOBRARA		0.00	
7,314.0	7,016.0	CODELL		0.00	
7,782.0	7,484.0	J-SAND		0.00	