

# ENSIGN

## Directional

### Well Name: Drake PC MM14-15D

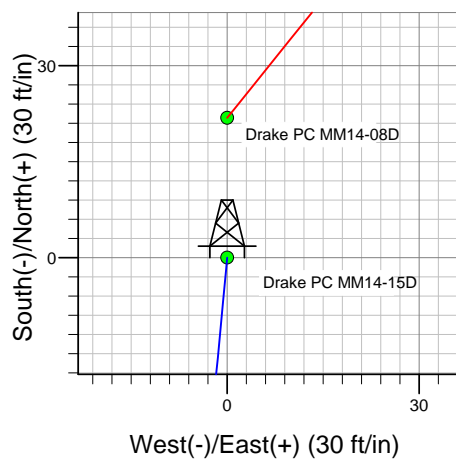
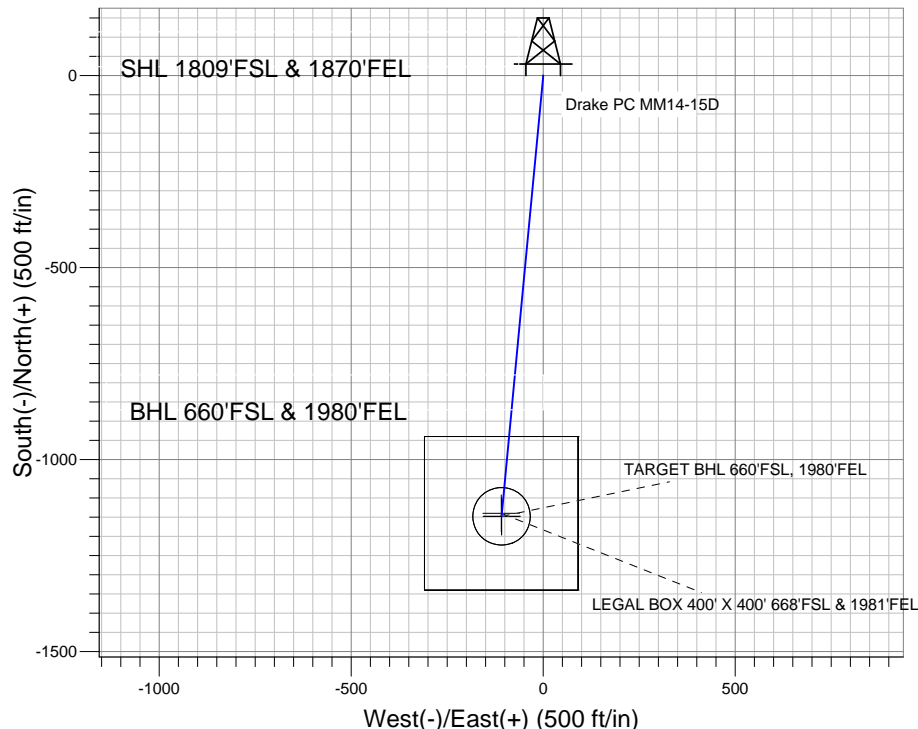
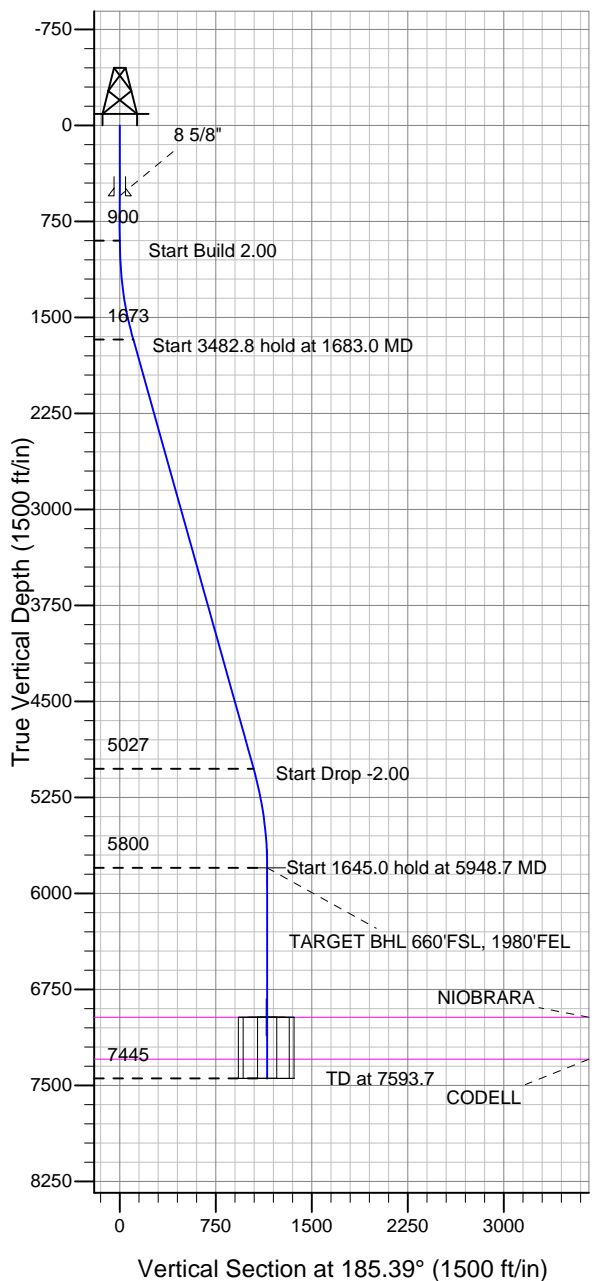
Surface Location: Drake PC MM14-08D Pad Sec.14-T7N-R67W  
North American Datum 1983 US State Plane 1983 Colorado Northern Zone

Ground Elevation: 5002.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1451812.50	3178459.95	40.571850	-104.857600	

Original Well Elev WELL @ 5015.0ft (Original Well Elev)

## NOBLE ENERGY INC WELD COUNTY CO



Drake PC MM14-08D Pad Sec.14-T7N-R67W  
Drake PC MM14-15D  
Noble Drake PC MM14-15D Plan #1 (5-24-11)  
9:31, May 26 2011



Azimuths to True North  
Magnetic North: 8.94°

Magnetic Field  
Strength: 53216.2snT  
Dip Angle: 67.18°  
Date: 5/24/2011  
Model: IGRF2010

### WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 660'FSL, 1980'FEL	5800.0	-1147.6	-108.4	40.568700	-104.857990	Point
LEGAL BOX 400' X 400' 668'FSL & 1981'FEL	6968.0	-1139.6	-109.4	40.568722	-104.857994	Rectangle (Sides: L400.0 W400.0)
TARGET CIRCLE 660'FSL & 1980'FEL	6968.0	-1147.6	-108.4	40.568700	-104.857990	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	900.0	0.00	0.00	900.0	0.0	0.0	0.00	0.00	0.0	
3	1683.0	15.66	185.39	1673.3	-105.9	-10.0	2.00	185.39	106.3	
4	5165.7	15.66	185.39	5026.7	-1041.7	-98.4	0.00	0.00	1046.4	
5	5948.7	0.00	0.00	5800.0	-1147.6	-108.4	2.00	180.00	1152.7	TARGET BHL 660'FSL, 1980'FEL
6	7593.7	0.00	0.00	7445.0	-1147.6	-108.4	0.00	0.00	1152.7	



## **Directional**

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

**SEC.14-T7N-R67W**

**Drake PC MM14-08D Pad Sec.14-T7N-R67W**

**Drake PC MM14-15D**

**Wellbore #1**

**Plan: Noble Drake PC MM14-15D Plan #1 (5-24-11)**

### **Standard Planning Report**

**26 May, 2011**



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Drake PC MM14-15D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 5015.0ft (Original Well Elev)
<b>Project:</b>	SEC.14-T7N-R67W	<b>MD Reference:</b>	WELL @ 5015.0ft (Original Well Elev)
<b>Site:</b>	Drake PC MM14-08D Pad Sec.14-T7N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	Drake PC MM14-15D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Drake PC MM14-15D Plan #1 (5-24-11)		

<b>Project</b>	SEC.14-T7N-R67W, 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 Drake PC MM14-08D Pad Sec.14-T7N-R67W					
Site Position:		Northing:		1,451,834.37 ft	
From:	Lat/Long	Easting:		Latitude:	40.571910
		3,178,459.79 ft		Longitude:	-104.857600
Position Uncertainty:		Slot Radius:		Grid Convergence:	0.42 °
0.0 ft		"			

Well	Drake PC MM14-15D					
Well Position	+N/-S	-21.9 ft	Northing:	1,451,812.50 ft	Latitude:	40.571850
	+E/-W	0.0 ft	Easting:	3,178,459.95 ft	Longitude:	-104.857600
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,002.0 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	5/24/2011	8.94	67.18	53,216

<b>Design</b>	Noble Drake PC MM14-15D Plan #1 (5-24-11)			
<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	185.39

<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	
900.0	0.00	0.00	900.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,683.0	15.66	185.39	1,673.3	-105.9	-10.0	2.00	2.00	0.00	185.39	
5,165.7	15.66	185.39	5,026.7	-1,041.7	-98.4	0.00	0.00	0.00	0.00	
5,948.7	0.00	0.00	5,800.0	-1,147.6	-108.4	2.00	-2.00	0.00	180.00	TARGET BHL 660'I
7,593.7	0.00	0.00	7,445.0	-1,147.6	-108.4	0.00	0.00	0.00	0.00	

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<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 5015.0ft (Original Well Elev)
<b>Project:</b>	SEC.14-T7N-R67W	<b>MD Reference:</b>	WELL @ 5015.0ft (Original Well Elev)
<b>Site:</b>	Drake PC MM14-08D Pad Sec.14-T7N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	Drake PC MM14-15D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Drake PC MM14-15D Plan #1 (5-24-11)		

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
550.0	0.00	0.00	550.0	0.0	0.0	0.0	0.00	0.00	0.00
8 5/8"									
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
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
920.0	0.40	185.39	920.0	-0.1	0.0	0.1	2.00	2.00	0.00
960.0	1.20	185.39	960.0	-0.6	-0.1	0.6	2.00	2.00	0.00
1,000.0	2.00	185.39	1,000.0	-1.7	-0.2	1.7	2.00	2.00	0.00
1,040.0	2.80	185.39	1,039.9	-3.4	-0.3	3.4	2.00	2.00	0.00
1,080.0	3.60	185.39	1,079.9	-5.6	-0.5	5.7	2.00	2.00	0.00
1,120.0	4.40	185.39	1,119.8	-8.4	-0.8	8.4	2.00	2.00	0.00
1,160.0	5.20	185.39	1,159.6	-11.7	-1.1	11.8	2.00	2.00	0.00
1,200.0	6.00	185.39	1,199.5	-15.6	-1.5	15.7	2.00	2.00	0.00
1,240.0	6.80	185.39	1,239.2	-20.1	-1.9	20.2	2.00	2.00	0.00
1,280.0	7.60	185.39	1,278.9	-25.1	-2.4	25.2	2.00	2.00	0.00
1,320.0	8.40	185.39	1,318.5	-30.6	-2.9	30.7	2.00	2.00	0.00
1,360.0	9.20	185.39	1,358.0	-36.7	-3.5	36.9	2.00	2.00	0.00
1,400.0	10.00	185.39	1,397.5	-43.3	-4.1	43.5	2.00	2.00	0.00
1,440.0	10.80	185.39	1,436.8	-50.5	-4.8	50.7	2.00	2.00	0.00
1,480.0	11.60	185.39	1,476.0	-58.3	-5.5	58.5	2.00	2.00	0.00
1,520.0	12.40	185.39	1,515.2	-66.5	-6.3	66.8	2.00	2.00	0.00
1,560.0	13.20	185.39	1,554.2	-75.4	-7.1	75.7	2.00	2.00	0.00
1,600.0	14.00	185.39	1,593.1	-84.7	-8.0	85.1	2.00	2.00	0.00
1,640.0	14.80	185.39	1,631.8	-94.6	-8.9	95.0	2.00	2.00	0.00
1,680.0	15.60	185.39	1,670.4	-105.1	-9.9	105.5	2.00	2.00	0.00
1,683.0	15.66	185.39	1,673.3	-105.9	-10.0	106.3	2.00	2.00	0.00
1,720.0	15.66	185.39	1,708.9	-115.8	-10.9	116.3	0.00	0.00	0.00
1,760.0	15.66	185.39	1,747.4	-126.6	-11.9	127.1	0.00	0.00	0.00
1,800.0	15.66	185.39	1,785.9	-137.3	-13.0	137.9	0.00	0.00	0.00
1,840.0	15.66	185.39	1,824.5	-148.1	-14.0	148.7	0.00	0.00	0.00
1,880.0	15.66	185.39	1,863.0	-158.8	-15.0	159.5	0.00	0.00	0.00
1,920.0	15.66	185.39	1,901.5	-169.6	-16.0	170.3	0.00	0.00	0.00
1,960.0	15.66	185.39	1,940.0	-180.3	-17.0	181.1	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Drake PC MM14-15D
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<b>Project:</b>	SEC.14-T7N-R67W	<b>MD Reference:</b>	WELL @ 5015.0ft (Original Well Elev)
<b>Site:</b>	Drake PC MM14-08D Pad Sec.14-T7N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	Drake PC MM14-15D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Drake PC MM14-15D Plan #1 (5-24-11)		

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)
2,000.0	15.66	185.39	1,978.5	-191.1	-18.0	191.9	0.00	0.00	0.00
2,040.0	15.66	185.39	2,017.0	-201.8	-19.1	202.7	0.00	0.00	0.00
2,080.0	15.66	185.39	2,055.6	-212.6	-20.1	213.5	0.00	0.00	0.00
2,120.0	15.66	185.39	2,094.1	-223.3	-21.1	224.3	0.00	0.00	0.00
2,160.0	15.66	185.39	2,132.6	-234.0	-22.1	235.1	0.00	0.00	0.00
2,200.0	15.66	185.39	2,171.1	-244.8	-23.1	245.9	0.00	0.00	0.00
2,240.0	15.66	185.39	2,209.6	-255.5	-24.1	256.7	0.00	0.00	0.00
2,280.0	15.66	185.39	2,248.1	-266.3	-25.1	267.5	0.00	0.00	0.00
2,320.0	15.66	185.39	2,286.6	-277.0	-26.2	278.3	0.00	0.00	0.00
2,360.0	15.66	185.39	2,325.2	-287.8	-27.2	289.1	0.00	0.00	0.00
2,400.0	15.66	185.39	2,363.7	-298.5	-28.2	299.9	0.00	0.00	0.00
2,440.0	15.66	185.39	2,402.2	-309.3	-29.2	310.7	0.00	0.00	0.00
2,480.0	15.66	185.39	2,440.7	-320.0	-30.2	321.5	0.00	0.00	0.00
2,520.0	15.66	185.39	2,479.2	-330.8	-31.2	332.3	0.00	0.00	0.00
2,560.0	15.66	185.39	2,517.7	-341.5	-32.2	343.1	0.00	0.00	0.00
2,600.0	15.66	185.39	2,556.3	-352.3	-33.3	353.9	0.00	0.00	0.00
2,640.0	15.66	185.39	2,594.8	-363.0	-34.3	364.6	0.00	0.00	0.00
2,680.0	15.66	185.39	2,633.3	-373.8	-35.3	375.4	0.00	0.00	0.00
2,720.0	15.66	185.39	2,671.8	-384.5	-36.3	386.2	0.00	0.00	0.00
2,760.0	15.66	185.39	2,710.3	-395.3	-37.3	397.0	0.00	0.00	0.00
2,800.0	15.66	185.39	2,748.8	-406.0	-38.3	407.8	0.00	0.00	0.00
2,840.0	15.66	185.39	2,787.3	-416.8	-39.4	418.6	0.00	0.00	0.00
2,880.0	15.66	185.39	2,825.9	-427.5	-40.4	429.4	0.00	0.00	0.00
2,920.0	15.66	185.39	2,864.4	-438.3	-41.4	440.2	0.00	0.00	0.00
2,960.0	15.66	185.39	2,902.9	-449.0	-42.4	451.0	0.00	0.00	0.00
3,000.0	15.66	185.39	2,941.4	-459.8	-43.4	461.8	0.00	0.00	0.00
3,040.0	15.66	185.39	2,979.9	-470.5	-44.4	472.6	0.00	0.00	0.00
3,080.0	15.66	185.39	3,018.4	-481.3	-45.4	483.4	0.00	0.00	0.00
3,120.0	15.66	185.39	3,057.0	-492.0	-46.5	494.2	0.00	0.00	0.00
3,160.0	15.66	185.39	3,095.5	-502.8	-47.5	505.0	0.00	0.00	0.00
3,200.0	15.66	185.39	3,134.0	-513.5	-48.5	515.8	0.00	0.00	0.00
3,240.0	15.66	185.39	3,172.5	-524.3	-49.5	526.6	0.00	0.00	0.00
3,280.0	15.66	185.39	3,211.0	-535.0	-50.5	537.4	0.00	0.00	0.00
3,320.0	15.66	185.39	3,249.5	-545.8	-51.5	548.2	0.00	0.00	0.00
3,360.0	15.66	185.39	3,288.0	-556.5	-52.5	559.0	0.00	0.00	0.00
3,400.0	15.66	185.39	3,326.6	-567.3	-53.6	569.8	0.00	0.00	0.00
3,440.0	15.66	185.39	3,365.1	-578.0	-54.6	580.6	0.00	0.00	0.00
3,480.0	15.66	185.39	3,403.6	-588.8	-55.6	591.4	0.00	0.00	0.00
3,520.0	15.66	185.39	3,442.1	-599.5	-56.6	602.2	0.00	0.00	0.00
3,560.0	15.66	185.39	3,480.6	-610.3	-57.6	613.0	0.00	0.00	0.00
3,600.0	15.66	185.39	3,519.1	-621.0	-58.6	623.8	0.00	0.00	0.00
3,640.0	15.66	185.39	3,557.7	-631.8	-59.6	634.6	0.00	0.00	0.00
3,680.0	15.66	185.39	3,596.2	-642.5	-60.7	645.4	0.00	0.00	0.00
3,720.0	15.66	185.39	3,634.7	-653.3	-61.7	656.2	0.00	0.00	0.00
3,760.0	15.66	185.39	3,673.2	-664.0	-62.7	667.0	0.00	0.00	0.00
3,800.0	15.66	185.39	3,711.7	-674.7	-63.7	677.7	0.00	0.00	0.00
3,840.0	15.66	185.39	3,750.2	-685.5	-64.7	688.5	0.00	0.00	0.00
3,880.0	15.66	185.39	3,788.7	-696.2	-65.7	699.3	0.00	0.00	0.00
3,920.0	15.66	185.39	3,827.3	-707.0	-66.8	710.1	0.00	0.00	0.00
3,960.0	15.66	185.39	3,865.8	-717.7	-67.8	720.9	0.00	0.00	0.00
4,000.0	15.66	185.39	3,904.3	-728.5	-68.8	731.7	0.00	0.00	0.00
4,040.0	15.66	185.39	3,942.8	-739.2	-69.8	742.5	0.00	0.00	0.00
4,080.0	15.66	185.39	3,981.3	-750.0	-70.8	753.3	0.00	0.00	0.00
4,120.0	15.66	185.39	4,019.8	-760.7	-71.8	764.1	0.00	0.00	0.00

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<b>Project:</b>	SEC.14-T7N-R67W	<b>MD Reference:</b>	WELL @ 5015.0ft (Original Well Elev)
<b>Site:</b>	Drake PC MM14-08D Pad Sec.14-T7N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	Drake PC MM14-15D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Drake PC MM14-15D Plan #1 (5-24-11)		

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)
4,160.0	15.66	185.39	4,058.4	-771.5	-72.8	774.9	0.00	0.00	0.00
4,200.0	15.66	185.39	4,096.9	-782.2	-73.9	785.7	0.00	0.00	0.00
4,240.0	15.66	185.39	4,135.4	-793.0	-74.9	796.5	0.00	0.00	0.00
4,280.0	15.66	185.39	4,173.9	-803.7	-75.9	807.3	0.00	0.00	0.00
4,320.0	15.66	185.39	4,212.4	-814.5	-76.9	818.1	0.00	0.00	0.00
4,360.0	15.66	185.39	4,250.9	-825.2	-77.9	828.9	0.00	0.00	0.00
4,400.0	15.66	185.39	4,289.4	-836.0	-78.9	839.7	0.00	0.00	0.00
4,440.0	15.66	185.39	4,328.0	-846.7	-79.9	850.5	0.00	0.00	0.00
4,480.0	15.66	185.39	4,366.5	-857.5	-81.0	861.3	0.00	0.00	0.00
4,520.0	15.66	185.39	4,405.0	-868.2	-82.0	872.1	0.00	0.00	0.00
4,560.0	15.66	185.39	4,443.5	-879.0	-83.0	882.9	0.00	0.00	0.00
4,600.0	15.66	185.39	4,482.0	-889.7	-84.0	893.7	0.00	0.00	0.00
4,640.0	15.66	185.39	4,520.5	-900.5	-85.0	904.5	0.00	0.00	0.00
4,680.0	15.66	185.39	4,559.1	-911.2	-86.0	915.3	0.00	0.00	0.00
4,720.0	15.66	185.39	4,597.6	-922.0	-87.0	926.1	0.00	0.00	0.00
4,760.0	15.66	185.39	4,636.1	-932.7	-88.1	936.9	0.00	0.00	0.00
4,800.0	15.66	185.39	4,674.6	-943.5	-89.1	947.7	0.00	0.00	0.00
4,840.0	15.66	185.39	4,713.1	-954.2	-90.1	958.5	0.00	0.00	0.00
4,880.0	15.66	185.39	4,751.6	-965.0	-91.1	969.3	0.00	0.00	0.00
4,920.0	15.66	185.39	4,790.1	-975.7	-92.1	980.1	0.00	0.00	0.00
4,960.0	15.66	185.39	4,828.7	-986.5	-93.1	990.9	0.00	0.00	0.00
5,000.0	15.66	185.39	4,867.2	-997.2	-94.2	1,001.6	0.00	0.00	0.00
5,040.0	15.66	185.39	4,905.7	-1,008.0	-95.2	1,012.4	0.00	0.00	0.00
5,080.0	15.66	185.39	4,944.2	-1,018.7	-96.2	1,023.2	0.00	0.00	0.00
5,120.0	15.66	185.39	4,982.7	-1,029.5	-97.2	1,034.0	0.00	0.00	0.00
5,160.0	15.66	185.39	5,021.2	-1,040.2	-98.2	1,044.8	0.00	0.00	0.00
5,165.7	15.66	185.39	5,026.7	-1,041.7	-98.4	1,046.4	0.00	0.00	0.00
5,200.0	14.97	185.39	5,059.8	-1,050.8	-99.2	1,055.4	2.00	-2.00	0.00
5,240.0	14.17	185.39	5,098.5	-1,060.8	-100.2	1,065.5	2.00	-2.00	0.00
5,280.0	13.37	185.39	5,137.4	-1,070.3	-101.0	1,075.0	2.00	-2.00	0.00
5,320.0	12.57	185.39	5,176.3	-1,079.2	-101.9	1,084.0	2.00	-2.00	0.00
5,360.0	11.77	185.39	5,215.4	-1,087.6	-102.7	1,092.4	2.00	-2.00	0.00
5,400.0	10.97	185.39	5,254.7	-1,095.5	-103.4	1,100.3	2.00	-2.00	0.00
5,440.0	10.17	185.39	5,294.0	-1,102.8	-104.1	1,107.7	2.00	-2.00	0.00
5,480.0	9.37	185.39	5,333.4	-1,109.5	-104.8	1,114.5	2.00	-2.00	0.00
5,520.0	8.57	185.39	5,372.9	-1,115.7	-105.3	1,120.7	2.00	-2.00	0.00
5,560.0	7.77	185.39	5,412.5	-1,121.4	-105.9	1,126.4	2.00	-2.00	0.00
5,600.0	6.97	185.39	5,452.2	-1,126.5	-106.4	1,131.5	2.00	-2.00	0.00
5,640.0	6.17	185.39	5,491.9	-1,131.1	-106.8	1,136.1	2.00	-2.00	0.00
5,680.0	5.37	185.39	5,531.7	-1,135.1	-107.2	1,140.1	2.00	-2.00	0.00
5,720.0	4.57	185.39	5,571.6	-1,138.5	-107.5	1,143.6	2.00	-2.00	0.00
5,760.0	3.77	185.39	5,611.4	-1,141.4	-107.8	1,146.5	2.00	-2.00	0.00
5,800.0	2.97	185.39	5,651.4	-1,143.8	-108.0	1,148.9	2.00	-2.00	0.00
5,840.0	2.17	185.39	5,691.3	-1,145.6	-108.2	1,150.6	2.00	-2.00	0.00
5,880.0	1.37	185.39	5,731.3	-1,146.8	-108.3	1,151.9	2.00	-2.00	0.00
5,920.0	0.57	185.39	5,771.3	-1,147.5	-108.3	1,152.6	2.00	-2.00	0.00
5,948.7	0.00	0.00	5,800.0	-1,147.6	-108.4	1,152.7	2.00	-2.00	608.65
TARGET BHL 660'FSL, 1980'FEL									
5,960.0	0.00	0.00	5,811.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
6,000.0	0.00	0.00	5,851.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
6,040.0	0.00	0.00	5,891.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
6,080.0	0.00	0.00	5,931.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
6,120.0	0.00	0.00	5,971.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
6,160.0	0.00	0.00	6,011.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Drake PC MM14-15D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 5015.0ft (Original Well Elev)
<b>Project:</b>	SEC.14-T7N-R67W	<b>MD Reference:</b>	WELL @ 5015.0ft (Original Well Elev)
<b>Site:</b>	Drake PC MM14-08D Pad Sec.14-T7N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	Drake PC MM14-15D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Drake PC MM14-15D Plan #1 (5-24-11)		

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)
6,200.0	0.00	0.00	6,051.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
6,240.0	0.00	0.00	6,091.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
6,280.0	0.00	0.00	6,131.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
6,320.0	0.00	0.00	6,171.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
6,360.0	0.00	0.00	6,211.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
6,400.0	0.00	0.00	6,251.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
6,440.0	0.00	0.00	6,291.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
6,480.0	0.00	0.00	6,331.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
6,520.0	0.00	0.00	6,371.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
6,560.0	0.00	0.00	6,411.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
6,600.0	0.00	0.00	6,451.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
6,640.0	0.00	0.00	6,491.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
6,680.0	0.00	0.00	6,531.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
6,720.0	0.00	0.00	6,571.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
6,760.0	0.00	0.00	6,611.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
6,800.0	0.00	0.00	6,651.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
6,840.0	0.00	0.00	6,691.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
6,880.0	0.00	0.00	6,731.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
6,920.0	0.00	0.00	6,771.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
6,960.0	0.00	0.00	6,811.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
7,000.0	0.00	0.00	6,851.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
7,040.0	0.00	0.00	6,891.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
7,080.0	0.00	0.00	6,931.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
7,116.7	0.00	0.00	6,968.0	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
<b>NIOBRARA - LEGAL BOX 400' X 400' 668'FSL &amp; 1981'FEL - TARGET CIRCLE 660'FSL &amp; 1980'FEL</b>									
7,120.0	0.00	0.00	6,971.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
7,160.0	0.00	0.00	7,011.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
7,200.0	0.00	0.00	7,051.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
7,240.0	0.00	0.00	7,091.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
7,280.0	0.00	0.00	7,131.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
7,320.0	0.00	0.00	7,171.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
7,360.0	0.00	0.00	7,211.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
7,400.0	0.00	0.00	7,251.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
7,440.0	0.00	0.00	7,291.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
7,443.7	0.00	0.00	7,295.0	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
<b>CODELL</b>									
7,480.0	0.00	0.00	7,331.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
7,520.0	0.00	0.00	7,371.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
7,560.0	0.00	0.00	7,411.3	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00
7,593.7	0.00	0.00	7,445.0	-1,147.6	-108.4	1,152.7	0.00	0.00	0.00



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Drake PC MM14-15D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 5015.0ft (Original Well Elev)
<b>Project:</b>	SEC.14-T7N-R67W	<b>MD Reference:</b>	WELL @ 5015.0ft (Original Well Elev)
<b>Site:</b>	Drake PC MM14-08D Pad Sec.14-T7N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	Drake PC MM14-15D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Drake PC MM14-15D Plan #1 (5-24-11)		

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)		
LEGAL BOX 400' X 400'	0.00	0.00	6,968.0	-1,139.6	-109.4	1,450,672.17	3,178,358.81	40.568722	-104.857994
- plan misses target center by 8.1ft at 7116.7ft MD (6968.0 TVD, -1147.6 N, -108.4 E)									
- Rectangle (sides W400.0 H400.0 D477.0)									
TARGET CIRCLE 66'	0.00	0.00	6,968.0	-1,147.6	-108.4	1,450,664.18	3,178,359.87	40.568700	-104.857990
- plan hits target center									
- Circle (radius 75.0)									
TARGET BHL 660'FS	0.00	0.00	5,800.0	-1,147.6	-108.4	1,450,664.17	3,178,359.92	40.568700	-104.857990
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
550.0	550.0	8 5/8"	8-5/8	12-1/4	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,116.7	6,968.0	NIOBRARA		0.00	
7,443.7	7,295.0	CODELL		0.00	