

# ENSIGN

## Directional

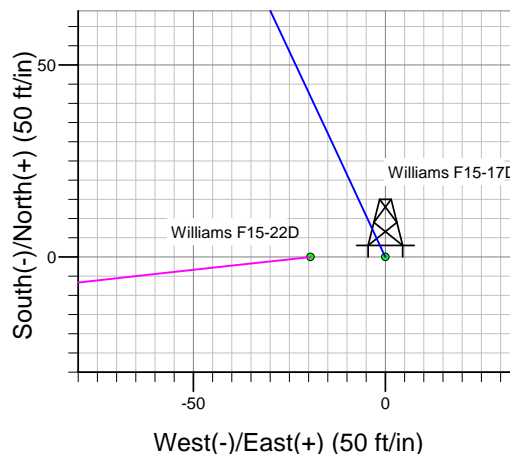
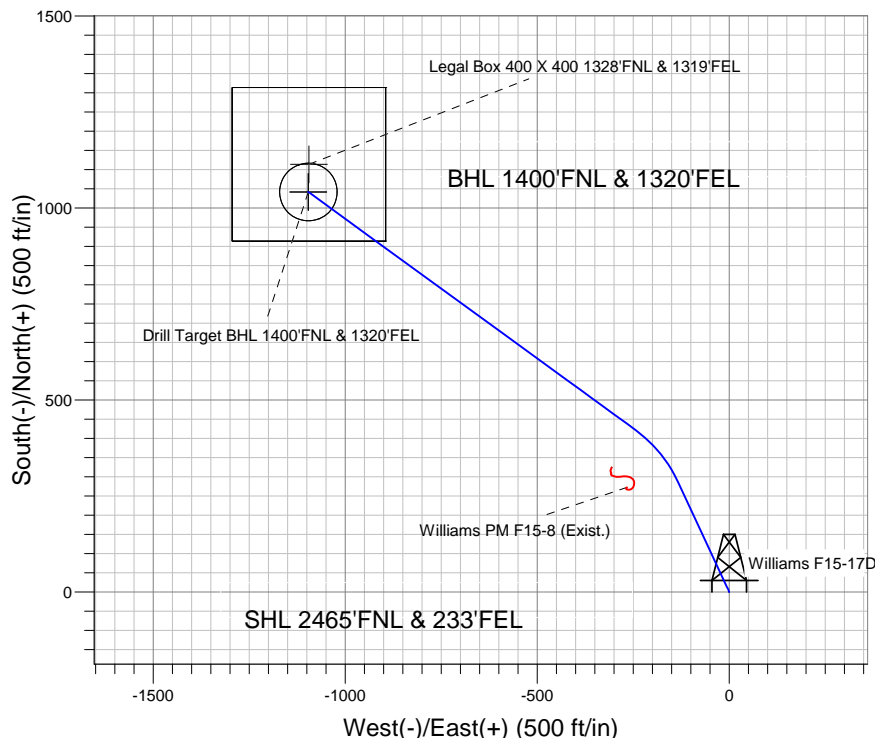
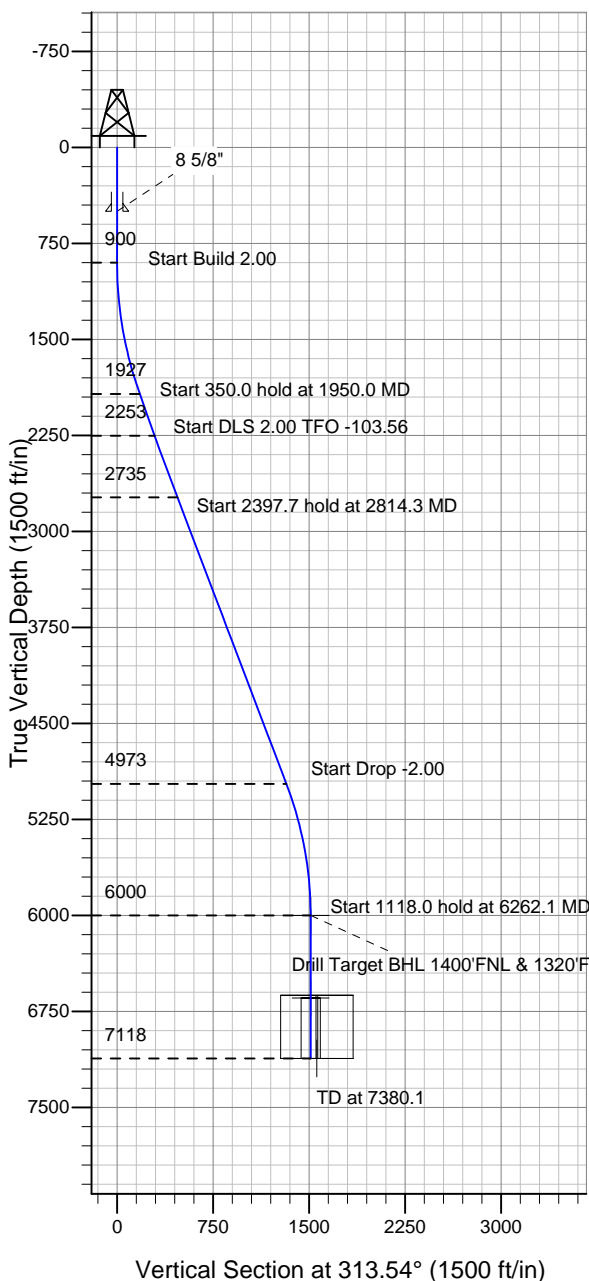
### Well Name: Williams F15-17D

Surface Location: Williams Pad SEC.15-T5N-R65W  
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

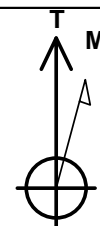
Ground Elevation: 4621.0

+N/-S +E/-W Northing Easting Latitude Longitude Slot  
0.0 0.0 1389657.73 3239290.17 40° 23' 59.388 N 104° 38' 26.916 W  
Original Well Elev WELL @ 4634.0ft (Original Well Elev)

## NOBLE ENERGY INC WELD COUNTY CO



Williams Pad SEC.15-T5N-R65W  
Williams F15-17D  
Noble Williams F15-17D Plan #4 (2-1-11)  
14:15, February 07 2011



Azimuths to True North  
Magnetic North: 8.85°

Magnetic Field  
Strength: 53183.5nT  
Dip Angle: 67.08°  
Date: 2/7/2011  
Model: IGRF2010

### WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Drill Target BHL 1400'FNL & 1320'FEL	6000.0	1041.6	-1096.0	40° 24' 9.680 N	104° 38' 41.083 W	Point
Target Circle 1400'FNL, 1320'FEL	6645.0	1041.6	-1096.0	40° 24' 9.680 N	104° 38' 41.083 W	Circle (Radius: 75.0)
Legal Box 400 X 400 1328'FNL & 1319'FEL	7118.0	1113.6	-1095.0	40° 24' 10.392 N	104° 38' 41.070 W	Rectangle (Sides: L400.0 W400.0)

### 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	1950.0	21.00	335.00	1926.7	172.5	-80.4	2.00	335.00	177.1	
4	2300.0	21.00	335.00	2253.4	286.1	-133.4	0.00	0.00	293.8	
5	2814.3	21.00	306.03	2734.9	424.2	-247.2	2.00	-103.56	471.4	
6	5212.1	21.00	306.03	4973.3	929.6	-942.2	0.00	0.00	1323.4	
7	6262.1	0.00	0.00	6000.0	1041.6	-1096.0	2.00	180.00	1512.0	Drill Target BHL 1400'FNL & 1320'FEL
8	7380.1	0.00	0.00	7118.0	1041.6	-1096.0	0.00	0.00	1512.0	



# **NOBLE ENERGY INC WELD COUNTY CO**

**SEC.15-T5N-R65W**

**Williams Pad SEC.15-T5N-R65W**

**Williams F15-17D**

**Williams F15-17D**

**Plan: Noble Williams F15-17D Plan #4 (2-1-11)**

## **Standard Planning Report**

**07 February, 2011**



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Williams F15-17D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 4634.0ft (Original Well Elev)
<b>Project:</b>	SEC.15-T5N-R65W	<b>MD Reference:</b>	WELL @ 4634.0ft (Original Well Elev)
<b>Site:</b>	Williams Pad SEC.15-T5N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Williams F15-17D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Williams F15-17D		
<b>Design:</b>	Noble Williams F15-17D Plan #4 (2-1-11)		

<b>Project</b>	SEC.15-T5N-R65W, 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 Williams Pad SEC.15-T5N-R65W					
Site Position:		Northing:	1,390,011.44 ft	Latitude:	40° 24' 2.916 N
From:	Lat/Long	Easting:	3,238,946.95 ft	Longitude:	104° 38' 31.308 W
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.55 °

Well	Williams F15-17D					
Well Position	+N-S	-357.0 ft	Northing:	1,389,657.73 ft	Latitude:	40° 23' 59.388 N
	+E-W	339.8 ft	Easting:	3,239,290.17 ft	Longitude:	104° 38' 26.916 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,621.0 ft

<b>Wellbore</b>	Williams F15-17D				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	2/7/2011	8.85	67.08	53,183

<b>Design</b>	Noble Williams F15-17D Plan #4 (2-1-11)			
<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	313.54

<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	
1,950.0	21.00	335.00	1,926.7	172.5	-80.4	2.00	2.00	0.00	335.00	
2,300.0	21.00	335.00	2,253.4	286.1	-133.4	0.00	0.00	0.00	0.00	
2,814.3	21.00	306.03	2,734.9	424.2	-247.2	2.00	0.00	-5.63	-103.56	
5,212.1	21.00	306.03	4,973.3	929.6	-942.2	0.00	0.00	0.00	0.00	
6,262.1	0.00	0.00	6,000.0	1,041.6	-1,096.0	2.00	-2.00	0.00	180.00	Drill Target BHL 14'
7,380.1	0.00	0.00	7,118.0	1,041.6	-1,096.0	0.00	0.00	0.00	0.00	

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<b>Project:</b>	SEC.15-T5N-R65W	<b>MD Reference:</b>	WELL @ 4634.0ft (Original Well Elev)
<b>Site:</b>	Williams Pad SEC.15-T5N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Williams F15-17D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Williams F15-17D		
<b>Design:</b>	Noble Williams F15-17D Plan #4 (2-1-11)		

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
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
8 5/8"									
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	0.00	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	335.00	920.0	0.1	0.0	0.1	2.00	2.00	0.00
960.0	1.20	335.00	960.0	0.6	-0.3	0.6	2.00	2.00	0.00
1,000.0	2.00	335.00	1,000.0	1.6	-0.7	1.6	2.00	2.00	0.00
1,040.0	2.80	335.00	1,039.9	3.1	-1.4	3.2	2.00	2.00	0.00
1,080.0	3.60	335.00	1,079.9	5.1	-2.4	5.3	2.00	2.00	0.00
1,120.0	4.40	335.00	1,119.8	7.7	-3.6	7.9	2.00	2.00	0.00
1,160.0	5.20	335.00	1,159.6	10.7	-5.0	11.0	2.00	2.00	0.00
1,200.0	6.00	335.00	1,199.5	14.2	-6.6	14.6	2.00	2.00	0.00
1,240.0	6.80	335.00	1,239.2	18.3	-8.5	18.8	2.00	2.00	0.00
1,280.0	7.60	335.00	1,278.9	22.8	-10.6	23.4	2.00	2.00	0.00
1,320.0	8.40	335.00	1,318.5	27.9	-13.0	28.6	2.00	2.00	0.00
1,360.0	9.20	335.00	1,358.0	33.4	-15.6	34.3	2.00	2.00	0.00
1,400.0	10.00	335.00	1,397.5	39.4	-18.4	40.5	2.00	2.00	0.00
1,440.0	10.80	335.00	1,436.8	46.0	-21.4	47.2	2.00	2.00	0.00
1,480.0	11.60	335.00	1,476.0	53.0	-24.7	54.5	2.00	2.00	0.00
1,520.0	12.40	335.00	1,515.2	60.6	-28.2	62.2	2.00	2.00	0.00
1,560.0	13.20	335.00	1,554.2	68.6	-32.0	70.4	2.00	2.00	0.00
1,600.0	14.00	335.00	1,593.1	77.1	-36.0	79.2	2.00	2.00	0.00
1,640.0	14.80	335.00	1,631.8	86.1	-40.2	88.5	2.00	2.00	0.00
1,680.0	15.60	335.00	1,670.4	95.6	-44.6	98.2	2.00	2.00	0.00
1,720.0	16.40	335.00	1,708.8	105.6	-49.3	108.5	2.00	2.00	0.00
1,760.0	17.20	335.00	1,747.1	116.1	-54.1	119.2	2.00	2.00	0.00
1,800.0	18.00	335.00	1,785.3	127.1	-59.3	130.5	2.00	2.00	0.00
1,840.0	18.80	335.00	1,823.2	138.5	-64.6	142.2	2.00	2.00	0.00
1,880.0	19.60	335.00	1,861.0	150.4	-70.2	154.5	2.00	2.00	0.00
1,920.0	20.40	335.00	1,898.6	162.8	-75.9	167.2	2.00	2.00	0.00
1,950.0	21.00	335.00	1,926.7	172.5	-80.4	177.1	2.00	2.00	0.00
1,960.0	21.00	335.00	1,936.0	175.7	-81.9	180.4	0.00	0.00	0.00

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<b>Well:</b>	Williams F15-17D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Williams F15-17D		
<b>Design:</b>	Noble Williams F15-17D Plan #4 (2-1-11)		

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	21.00	335.00	1,973.3	188.7	-88.0	193.8	0.00	0.00	0.00
2,040.0	21.00	335.00	2,010.7	201.7	-94.0	207.1	0.00	0.00	0.00
2,080.0	21.00	335.00	2,048.0	214.7	-100.1	220.4	0.00	0.00	0.00
2,120.0	21.00	335.00	2,085.4	227.7	-106.2	233.8	0.00	0.00	0.00
2,160.0	21.00	335.00	2,122.7	240.7	-112.2	247.1	0.00	0.00	0.00
2,200.0	21.00	335.00	2,160.0	253.6	-118.3	260.5	0.00	0.00	0.00
2,240.0	21.00	335.00	2,197.4	266.6	-124.3	273.8	0.00	0.00	0.00
2,280.0	21.00	335.00	2,234.7	279.6	-130.4	287.1	0.00	0.00	0.00
2,300.0	21.00	335.00	2,253.4	286.1	-133.4	293.8	0.00	0.00	0.00
2,320.0	20.91	333.91	2,272.1	292.6	-136.5	300.5	2.00	-0.45	-5.45
2,360.0	20.75	331.71	2,309.5	305.2	-143.0	313.9	2.00	-0.40	-5.51
2,400.0	20.62	329.47	2,346.9	317.5	-149.9	327.4	2.00	-0.33	-5.59
2,440.0	20.52	327.21	2,384.3	329.5	-157.3	341.0	2.00	-0.26	-5.65
2,480.0	20.44	324.94	2,421.8	341.1	-165.1	354.7	2.00	-0.18	-5.69
2,520.0	20.40	322.65	2,459.3	352.4	-173.4	368.4	2.00	-0.11	-5.72
2,560.0	20.39	320.35	2,496.8	363.3	-182.0	382.2	2.00	-0.03	-5.74
2,600.0	20.41	318.06	2,534.3	373.8	-191.2	396.1	2.00	0.04	-5.74
2,640.0	20.45	315.77	2,571.8	384.0	-200.7	410.0	2.00	0.12	-5.72
2,672.3	20.51	313.93	2,602.0	392.0	-208.7	421.3	2.00	0.19	-5.69
<b>Pierre Silt</b>									
2,680.0	20.53	313.49	2,609.2	393.9	-210.7	424.0	2.00	0.22	-5.67
2,720.0	20.64	311.24	2,646.7	403.3	-221.0	438.1	2.00	0.27	-5.64
2,760.0	20.77	309.01	2,684.1	412.4	-231.9	452.2	2.00	0.34	-5.58
2,800.0	20.94	306.81	2,721.5	421.2	-243.1	466.4	2.00	0.41	-5.50
2,814.3	21.00	306.03	2,734.9	424.2	-247.2	471.4	2.00	0.46	-5.44
2,840.0	21.00	306.03	2,758.8	429.6	-254.7	480.6	0.00	0.00	0.00
2,880.0	21.00	306.03	2,796.2	438.1	-266.2	494.8	0.00	0.00	0.00
2,920.0	21.00	306.03	2,833.5	446.5	-277.8	509.0	0.00	0.00	0.00
2,960.0	21.00	306.03	2,870.9	454.9	-289.4	523.2	0.00	0.00	0.00
3,000.0	21.00	306.03	2,908.2	463.4	-301.0	537.4	0.00	0.00	0.00
3,040.0	21.00	306.03	2,945.5	471.8	-312.6	551.6	0.00	0.00	0.00
3,080.0	21.00	306.03	2,982.9	480.2	-324.2	565.8	0.00	0.00	0.00
3,120.0	21.00	306.03	3,020.2	488.7	-335.8	580.0	0.00	0.00	0.00
3,160.0	21.00	306.03	3,057.6	497.1	-347.4	594.3	0.00	0.00	0.00
3,200.0	21.00	306.03	3,094.9	505.5	-359.0	608.5	0.00	0.00	0.00
3,240.0	21.00	306.03	3,132.3	514.0	-370.6	622.7	0.00	0.00	0.00
3,280.0	21.00	306.03	3,169.6	522.4	-382.2	636.9	0.00	0.00	0.00
3,320.0	21.00	306.03	3,206.9	530.8	-393.8	651.1	0.00	0.00	0.00
3,360.0	21.00	306.03	3,244.3	539.3	-405.4	665.3	0.00	0.00	0.00
3,400.0	21.00	306.03	3,281.6	547.7	-417.0	679.5	0.00	0.00	0.00
3,440.0	21.00	306.03	3,319.0	556.1	-428.6	693.7	0.00	0.00	0.00
3,480.0	21.00	306.03	3,356.3	564.5	-440.1	708.0	0.00	0.00	0.00
3,520.0	21.00	306.03	3,393.7	573.0	-451.7	722.2	0.00	0.00	0.00
3,560.0	21.00	306.03	3,431.0	581.4	-463.3	736.4	0.00	0.00	0.00
3,600.0	21.00	306.03	3,468.3	589.8	-474.9	750.6	0.00	0.00	0.00
3,640.0	21.00	306.03	3,505.7	598.3	-486.5	764.8	0.00	0.00	0.00
3,652.1	21.00	306.03	3,517.0	600.8	-490.0	769.1	0.00	0.00	0.00
<b>Parkman</b>									
3,680.0	21.00	306.03	3,543.0	606.7	-498.1	779.0	0.00	0.00	0.00
3,720.0	21.00	306.03	3,580.4	615.1	-509.7	793.2	0.00	0.00	0.00
3,760.0	21.00	306.03	3,617.7	623.6	-521.3	807.4	0.00	0.00	0.00
3,800.0	21.00	306.03	3,655.1	632.0	-532.9	821.6	0.00	0.00	0.00
3,840.0	21.00	306.03	3,692.4	640.4	-544.5	835.9	0.00	0.00	0.00
3,880.0	21.00	306.03	3,729.7	648.9	-556.1	850.1	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Williams F15-17D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 4634.0ft (Original Well Elev)
<b>Project:</b>	SEC.15-T5N-R65W	<b>MD Reference:</b>	WELL @ 4634.0ft (Original Well Elev)
<b>Site:</b>	Williams Pad SEC.15-T5N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Williams F15-17D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Williams F15-17D		
<b>Design:</b>	Noble Williams F15-17D Plan #4 (2-1-11)		

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)
3,920.0	21.00	306.03	3,767.1	657.3	-567.7	864.3	0.00	0.00	0.00
3,960.0	21.00	306.03	3,804.4	665.7	-579.3	878.5	0.00	0.00	0.00
4,000.0	21.00	306.03	3,841.8	674.2	-590.9	892.7	0.00	0.00	0.00
4,040.0	21.00	306.03	3,879.1	682.6	-602.5	906.9	0.00	0.00	0.00
4,080.0	21.00	306.03	3,916.5	691.0	-614.0	921.1	0.00	0.00	0.00
4,120.0	21.00	306.03	3,953.8	699.5	-625.6	935.3	0.00	0.00	0.00
4,160.0	21.00	306.03	3,991.1	707.9	-637.2	949.6	0.00	0.00	0.00
4,200.0	21.00	306.03	4,028.5	716.3	-648.8	963.8	0.00	0.00	0.00
4,240.0	21.00	306.03	4,065.8	724.7	-660.4	978.0	0.00	0.00	0.00
4,280.0	21.00	306.03	4,103.2	733.2	-672.0	992.2	0.00	0.00	0.00
4,320.0	21.00	306.03	4,140.5	741.6	-683.6	1,006.4	0.00	0.00	0.00
4,360.0	21.00	306.03	4,177.9	750.0	-695.2	1,020.6	0.00	0.00	0.00
4,400.0	21.00	306.03	4,215.2	758.5	-706.8	1,034.8	0.00	0.00	0.00
4,440.0	21.00	306.03	4,252.6	766.9	-718.4	1,049.0	0.00	0.00	0.00
4,458.7	21.00	306.03	4,270.0	770.8	-723.8	1,055.7	0.00	0.00	0.00
<b>Sussex</b>									
4,480.0	21.00	306.03	4,289.9	775.3	-730.0	1,063.3	0.00	0.00	0.00
4,520.0	21.00	306.03	4,327.2	783.8	-741.6	1,077.5	0.00	0.00	0.00
4,560.0	21.00	306.03	4,364.6	792.2	-753.2	1,091.7	0.00	0.00	0.00
4,600.0	21.00	306.03	4,401.9	800.6	-764.8	1,105.9	0.00	0.00	0.00
4,640.0	21.00	306.03	4,439.3	809.1	-776.4	1,120.1	0.00	0.00	0.00
4,680.0	21.00	306.03	4,476.6	817.5	-787.9	1,134.3	0.00	0.00	0.00
4,720.0	21.00	306.03	4,514.0	825.9	-799.5	1,148.5	0.00	0.00	0.00
4,760.0	21.00	306.03	4,551.3	834.4	-811.1	1,162.7	0.00	0.00	0.00
4,800.0	21.00	306.03	4,588.6	842.8	-822.7	1,177.0	0.00	0.00	0.00
4,840.0	21.00	306.03	4,626.0	851.2	-834.3	1,191.2	0.00	0.00	0.00
4,880.0	21.00	306.03	4,663.3	859.6	-845.9	1,205.4	0.00	0.00	0.00
4,920.0	21.00	306.03	4,700.7	868.1	-857.5	1,219.6	0.00	0.00	0.00
4,960.0	21.00	306.03	4,738.0	876.5	-869.1	1,233.8	0.00	0.00	0.00
5,000.0	21.00	306.03	4,775.4	884.9	-880.7	1,248.0	0.00	0.00	0.00
5,040.0	21.00	306.03	4,812.7	893.4	-892.3	1,262.2	0.00	0.00	0.00
5,080.0	21.00	306.03	4,850.0	901.8	-903.9	1,276.4	0.00	0.00	0.00
5,120.0	21.00	306.03	4,887.4	910.2	-915.5	1,290.6	0.00	0.00	0.00
5,159.2	21.00	306.03	4,924.0	918.5	-926.8	1,304.6	0.00	0.00	0.00
<b>Shannon</b>									
5,160.0	21.00	306.03	4,924.7	918.7	-927.1	1,304.9	0.00	0.00	0.00
5,200.0	21.00	306.03	4,962.1	927.1	-938.7	1,319.1	0.00	0.00	0.00
5,212.1	21.00	306.03	4,973.3	929.6	-942.2	1,323.4	0.00	0.00	0.00
5,240.0	20.44	306.03	4,999.5	935.5	-950.1	1,333.2	2.00	-2.00	0.00
5,280.0	19.64	306.03	5,037.0	943.5	-961.2	1,346.7	2.00	-2.00	0.00
5,320.0	18.84	306.03	5,074.8	951.3	-971.9	1,359.8	2.00	-2.00	0.00
5,360.0	18.04	306.03	5,112.7	958.7	-982.1	1,372.4	2.00	-2.00	0.00
5,400.0	17.24	306.03	5,150.9	965.8	-991.9	1,384.4	2.00	-2.00	0.00
5,440.0	16.44	306.03	5,189.2	972.7	-1,001.3	1,395.9	2.00	-2.00	0.00
5,480.0	15.64	306.03	5,227.6	979.2	-1,010.2	1,406.8	2.00	-2.00	0.00
5,520.0	14.84	306.03	5,266.2	985.3	-1,018.7	1,417.3	2.00	-2.00	0.00
5,560.0	14.04	306.03	5,304.9	991.2	-1,026.8	1,427.1	2.00	-2.00	0.00
5,600.0	13.24	306.03	5,343.8	996.8	-1,034.4	1,436.5	2.00	-2.00	0.00
5,640.0	12.44	306.03	5,382.8	1,002.0	-1,041.6	1,445.3	2.00	-2.00	0.00
5,680.0	11.64	306.03	5,421.9	1,006.9	-1,048.4	1,453.6	2.00	-2.00	0.00
5,720.0	10.84	306.03	5,461.1	1,011.5	-1,054.7	1,461.3	2.00	-2.00	0.00
5,760.0	10.04	306.03	5,500.5	1,015.8	-1,060.6	1,468.5	2.00	-2.00	0.00
5,800.0	9.24	306.03	5,539.9	1,019.7	-1,066.0	1,475.1	2.00	-2.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Williams F15-17D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 4634.0ft (Original Well Elev)
<b>Project:</b>	SEC.15-T5N-R65W	<b>MD Reference:</b>	WELL @ 4634.0ft (Original Well Elev)
<b>Site:</b>	Williams Pad SEC.15-T5N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Williams F15-17D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Williams F15-17D		
<b>Design:</b>	Noble Williams F15-17D Plan #4 (2-1-11)		

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)
5,840.0	8.44	306.03	5,579.4	1,023.3	-1,070.9	1,481.2	2.00	-2.00	0.00
5,880.0	7.64	306.03	5,619.0	1,026.6	-1,075.5	1,486.8	2.00	-2.00	0.00
5,920.0	6.84	306.03	5,658.7	1,029.6	-1,079.5	1,491.8	2.00	-2.00	0.00
5,960.0	6.04	306.03	5,698.5	1,032.2	-1,083.2	1,496.2	2.00	-2.00	0.00
6,000.0	5.24	306.03	5,738.3	1,034.5	-1,086.4	1,500.1	2.00	-2.00	0.00
6,040.0	4.44	306.03	5,778.1	1,036.5	-1,089.1	1,503.5	2.00	-2.00	0.00
6,080.0	3.64	306.03	5,818.0	1,038.2	-1,091.4	1,506.3	2.00	-2.00	0.00
6,120.0	2.84	306.03	5,858.0	1,039.5	-1,093.2	1,508.5	2.00	-2.00	0.00
6,160.0	2.04	306.03	5,897.9	1,040.5	-1,094.6	1,510.2	2.00	-2.00	0.00
6,200.0	1.24	306.03	5,937.9	1,041.2	-1,095.5	1,511.3	2.00	-2.00	0.00
6,240.0	0.44	306.03	5,977.9	1,041.5	-1,096.0	1,511.9	2.00	-2.00	0.00
6,262.1	0.00	0.00	6,000.0	1,041.6	-1,096.0	1,512.0	2.00	-2.00	0.00
Drill Target BHL 1400'FNL & 1320'FEL									
6,280.0	0.00	0.00	6,017.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
6,320.0	0.00	0.00	6,057.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
6,360.0	0.00	0.00	6,097.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,137.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
6,440.0	0.00	0.00	6,177.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
6,480.0	0.00	0.00	6,217.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
6,520.0	0.00	0.00	6,257.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
6,560.0	0.00	0.00	6,297.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,337.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
6,640.0	0.00	0.00	6,377.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
6,680.0	0.00	0.00	6,417.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
6,720.0	0.00	0.00	6,457.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
6,760.0	0.00	0.00	6,497.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,537.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
6,840.0	0.00	0.00	6,577.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
6,880.0	0.00	0.00	6,617.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
6,907.1	0.00	0.00	6,645.0	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
Niobrara - Target Circle 1400'FNL, 1320'FEL									
6,920.0	0.00	0.00	6,657.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
6,960.0	0.00	0.00	6,697.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
7,000.0	0.00	0.00	6,737.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
7,040.0	0.00	0.00	6,777.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
7,080.0	0.00	0.00	6,817.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
7,120.0	0.00	0.00	6,857.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
7,160.0	0.00	0.00	6,897.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
7,200.0	0.00	0.00	6,937.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
7,214.1	0.00	0.00	6,952.0	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
Ft. Hays									
7,235.1	0.00	0.00	6,973.0	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
Codell									
7,240.0	0.00	0.00	6,977.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
7,280.0	0.00	0.00	7,017.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
7,320.0	0.00	0.00	7,057.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
7,360.0	0.00	0.00	7,097.9	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
7,380.1	0.00	0.00	7,118.0	1,041.6	-1,096.0	1,512.0	0.00	0.00	0.00
Legal Box 400 X 400 1328'FNL & 1319'FEL									



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Williams F15-17D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 4634.0ft (Original Well Elev)
<b>Project:</b>	SEC.15-T5N-R65W	<b>MD Reference:</b>	WELL @ 4634.0ft (Original Well Elev)
<b>Site:</b>	Williams Pad SEC.15-T5N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Williams F15-17D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Williams F15-17D		
<b>Design:</b>	Noble Williams F15-17D Plan #4 (2-1-11)		

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)		
Drill Target BHL 1400	0.00	0.00	6,000.0	1,041.6	-1,096.0	1,390,688.58	3,238,184.13	40° 24' 9.680 N	104° 38' 41.083 W
- plan hits target center									
- Point									
Target Circle 1400'FN	0.00	0.00	6,645.0	1,041.6	-1,096.0	1,390,688.62	3,238,184.17	40° 24' 9.680 N	104° 38' 41.083 W
- plan misses target center by 0.1ft at 6907.1ft MD (6645.0 TVD, 1041.6 N, -1096.0 E)									
- Circle (radius 75.0)									
Legal Box 400 X 400	0.00	0.00	7,118.0	1,113.6	-1,095.0	1,390,760.62	3,238,184.48	40° 24' 10.392 N	104° 38' 41.070 W
- plan misses target center by 72.0ft at 7380.1ft MD (7118.0 TVD, 1041.6 N, -1096.0 E)									
- Rectangle (sides W400.0 H400.0 D0.0)									

Casing Points					
	Measured Depth	Vertical Depth		Casing Diameter	Hole Diameter
	(ft)	(ft)	Name	(")	(")
	500.0	500.0	8 5/8"	8-5/8	12-1/4

Formations						
	Measured Depth	Vertical Depth			Dip	Dip Direction
	(ft)	(ft)	Name	Lithology	(°)	(°)
	2,672.3	2,602.0	Pierre Silt		0.00	
	3,652.1	3,517.0	Parkman		0.00	
	4,458.7	4,270.0	Sussex		0.00	
	5,159.2	4,924.0	Shannon		0.00	
	6,907.1	6,645.0	Niobrara		0.00	
	7,214.1	6,952.0	Ft. Hays		0.00	
	7,235.1	6,973.0	Codell		0.00	