

# ENSIGN

## Directional

### Well Name: Boiko PC G15-29D

Surface Location: Boiko PC G15-28D Pad Sec.15-T4N-R65W  
 North American Datum 1983 US State Plane 1983 Colorado Northern Zone

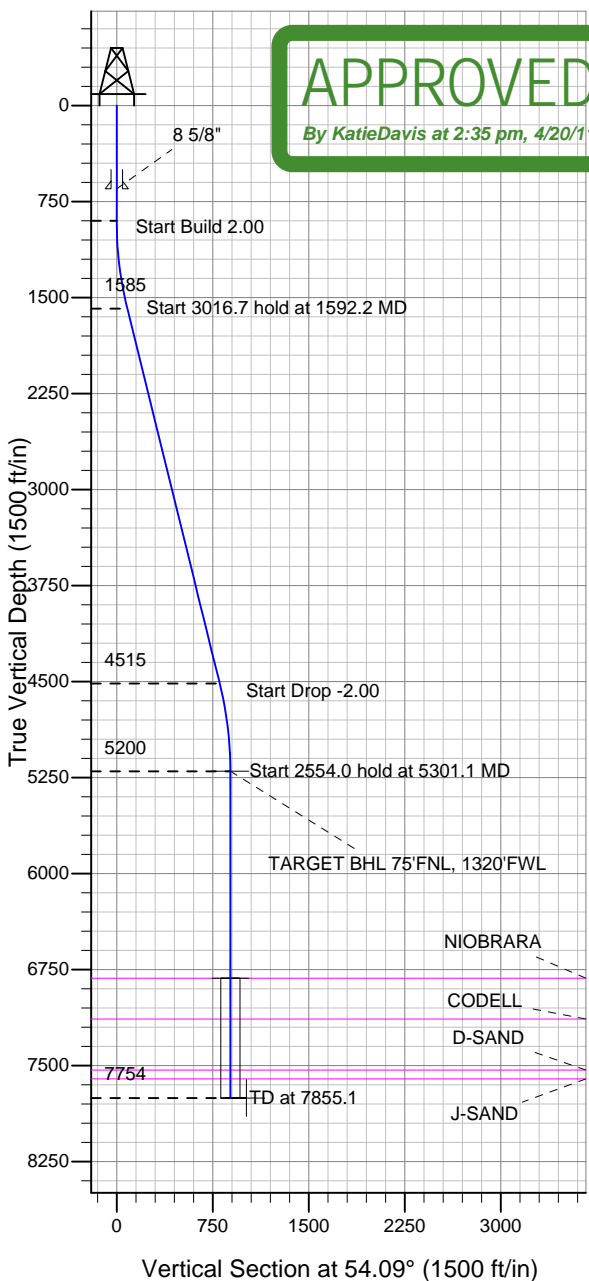
Ground Elevation: 4725.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1359839.91	3235220.51	40.318090	-104.656440	

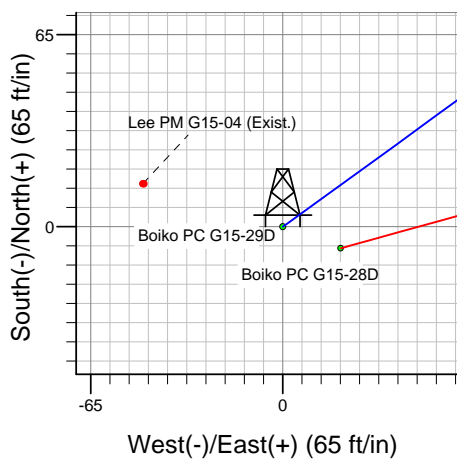
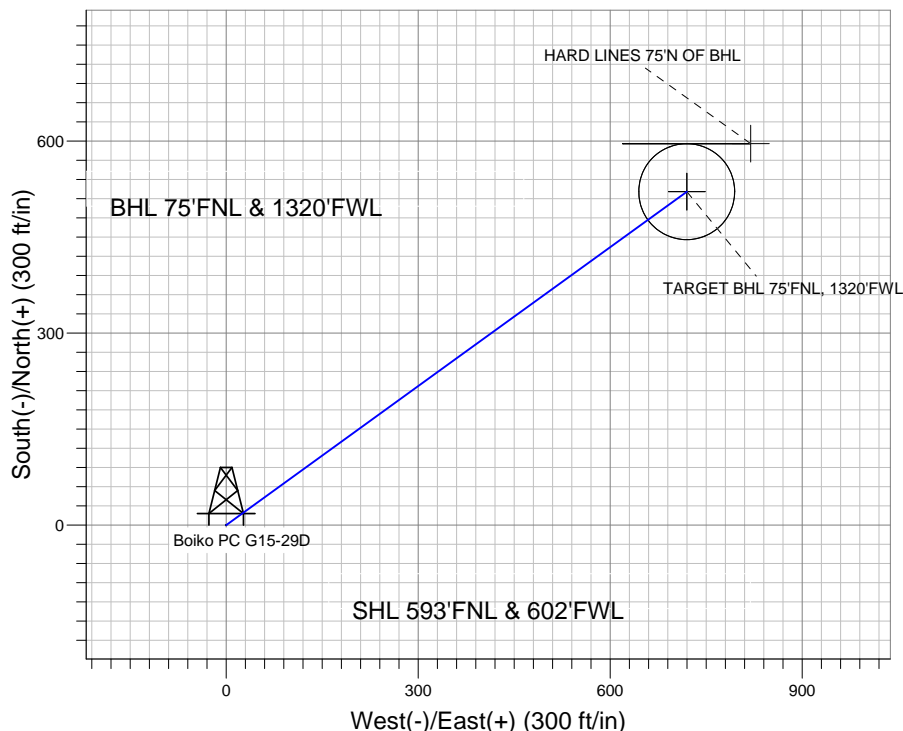
Original Well Elev WELL @ 4738.0ft (Original Well Elev)

**APPROVED**

By Katie Davis at 2:35 pm, 4/20/11



### NOBLE ENERGY INC WELD COUNTY CO



Boiko PC G15-28D Pad Sec.15-T4N-R65W  
 Boiko PC G15-29D  
 Noble Boiko PC G15-29D Plan #2 (4-11-11)  
 15:10, April 14 2011



Azimuths to True North  
 Magnetic North: 8.78°

Magnetic Field  
 Strength: 53141.2snT  
 Dip Angle: 67.02°  
 Date: 4/12/2011  
 Model: IGRF200510

#### WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 75'FNL, 1320'FWL	5200.0	521.0	719.4	40.319520	-104.653860	Point
TARGET CIRCLE 75'FNL & 1320'FWL	6818.0	521.0	719.4	40.319520	-104.653860	Circle (Radius: 75.0)
HARD LINES 75'N OF BHL	7754.0	596.0	819.4	40.319726	-104.653502	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	900.0	0.00	0.00	900.0	0.0	0.0	0.00	0.00	0.0	
3	1592.2	13.84	54.09	1585.5	48.8	67.4	2.00	54.09	83.2	
4	4608.9	13.84	54.09	4514.5	472.2	652.0	0.00	0.00	805.0	
5	5301.1	0.00	0.00	5200.0	521.0	719.4	2.00	180.00	888.3	TARGET BHL 75'FNL, 1320'FWL
6	7855.1	0.00	0.00	7754.0	521.0	719.4	0.00	0.00	888.3	



## **Directional**

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

**SEC.15-T4N-R65W**

**Boiko PC G15-28D Pad Sec.15-T4N-R65W**

**Boiko PC G15-29D**

**Wellbore #1**

**Plan: Noble Boiko PC G15-29D Plan #2 (4-11-11)**

### **Standard Planning Report**

**14 April, 2011**



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Boiko PC G15-29D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 4738.0ft (Original Well Elev)
<b>Project:</b>	SEC.15-T4N-R65W	<b>MD Reference:</b>	WELL @ 4738.0ft (Original Well Elev)
<b>Site:</b>	Boiko PC G15-28D Pad Sec.15-T4N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Boiko PC G15-29D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Boiko PC G15-29D Plan #2 (4-11-11)		

<b>Project</b>	SEC.15-T4N-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

Boiko PC G15-28D Pad Sec.15-T4N-R65W					
Site Position:		Northing:	1,359,832.82 ft	Latitude:	40.318070
From:	Lat/Long	Easting:	3,235,240.10 ft	Longitude:	-104.656370
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.55 °

Well	Boiko PC G15-29D					
Well Position	+N-S	7.3 ft	Northing:	1,359,839.91 ft	Latitude:	40.318090
	+E-W	-19.5 ft	Easting:	3,235,220.51 ft	Longitude:	-104.656440
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,725.0 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>
	IGRF200510	4/12/2011	8.78	67.02	53,141

<b>Design</b>	Noble Boiko PC G15-29D Plan #2 (4-11-11)			
<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	54.09

<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	
1,592.2	13.84	54.09	1,585.5	48.8	67.4	2.00	2.00	0.00	54.09	
4,608.9	13.84	54.09	4,514.5	472.2	652.0	0.00	0.00	0.00	0.00	
5,301.1	0.00	0.00	5,200.0	521.0	719.4	2.00	-2.00	0.00	180.00	TARGET BHL 75'FI
7,855.1	0.00	0.00	7,754.0	521.0	719.4	0.00	0.00	0.00	0.00	

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Boiko PC G15-29D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 4738.0ft (Original Well Elev)
<b>Project:</b>	SEC.15-T4N-R65W	<b>MD Reference:</b>	WELL @ 4738.0ft (Original Well Elev)
<b>Site:</b>	Boiko PC G15-28D Pad Sec.15-T4N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Boiko PC G15-29D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Boiko PC G15-29D Plan #2 (4-11-11)		

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
640.0	0.00	0.00	640.0	0.0	0.0	0.0	0.00	0.00	0.00
650.0	0.00	0.00	650.0	0.0	0.0	0.0	0.00	0.00	0.00
8 5/8"									
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	54.09	920.0	0.0	0.1	0.1	2.00	2.00	0.00
960.0	1.20	54.09	960.0	0.4	0.5	0.6	2.00	2.00	0.00
1,000.0	2.00	54.09	1,000.0	1.0	1.4	1.7	2.00	2.00	0.00
1,040.0	2.80	54.09	1,039.9	2.0	2.8	3.4	2.00	2.00	0.00
1,080.0	3.60	54.09	1,079.9	3.3	4.6	5.7	2.00	2.00	0.00
1,120.0	4.40	54.09	1,119.8	5.0	6.8	8.4	2.00	2.00	0.00
1,160.0	5.20	54.09	1,159.6	6.9	9.5	11.8	2.00	2.00	0.00
1,200.0	6.00	54.09	1,199.5	9.2	12.7	15.7	2.00	2.00	0.00
1,240.0	6.80	54.09	1,239.2	11.8	16.3	20.2	2.00	2.00	0.00
1,280.0	7.60	54.09	1,278.9	14.8	20.4	25.2	2.00	2.00	0.00
1,320.0	8.40	54.09	1,318.5	18.0	24.9	30.7	2.00	2.00	0.00
1,360.0	9.20	54.09	1,358.0	21.6	29.8	36.9	2.00	2.00	0.00
1,400.0	10.00	54.09	1,397.5	25.5	35.3	43.5	2.00	2.00	0.00
1,440.0	10.80	54.09	1,436.8	29.8	41.1	50.7	2.00	2.00	0.00
1,480.0	11.60	54.09	1,476.0	34.3	47.4	58.5	2.00	2.00	0.00
1,520.0	12.40	54.09	1,515.2	39.2	54.1	66.8	2.00	2.00	0.00
1,560.0	13.20	54.09	1,554.2	44.4	61.3	75.7	2.00	2.00	0.00
1,592.2	13.84	54.09	1,585.5	48.8	67.4	83.2	2.00	2.00	0.00
1,600.0	13.84	54.09	1,593.1	49.9	68.9	85.1	0.00	0.00	0.00
1,640.0	13.84	54.09	1,631.9	55.5	76.7	94.7	0.00	0.00	0.00
1,680.0	13.84	54.09	1,670.7	61.1	84.4	104.2	0.00	0.00	0.00
1,720.0	13.84	54.09	1,709.6	66.7	92.2	113.8	0.00	0.00	0.00
1,760.0	13.84	54.09	1,748.4	72.4	99.9	123.4	0.00	0.00	0.00
1,800.0	13.84	54.09	1,787.2	78.0	107.7	132.9	0.00	0.00	0.00
1,840.0	13.84	54.09	1,826.1	83.6	115.4	142.5	0.00	0.00	0.00
1,880.0	13.84	54.09	1,864.9	89.2	123.2	152.1	0.00	0.00	0.00
1,920.0	13.84	54.09	1,903.8	94.8	130.9	161.7	0.00	0.00	0.00
1,960.0	13.84	54.09	1,942.6	100.4	138.7	171.2	0.00	0.00	0.00

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<b>Project:</b>	SEC.15-T4N-R65W	<b>MD Reference:</b>	WELL @ 4738.0ft (Original Well Elev)
<b>Site:</b>	Boiko PC G15-28D Pad Sec.15-T4N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Boiko PC G15-29D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Boiko PC G15-29D Plan #2 (4-11-11)		

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	13.84	54.09	1,981.4	106.0	146.4	180.8	0.00	0.00	0.00
2,040.0	13.84	54.09	2,020.3	111.7	154.2	190.4	0.00	0.00	0.00
2,080.0	13.84	54.09	2,059.1	117.3	161.9	199.9	0.00	0.00	0.00
2,120.0	13.84	54.09	2,098.0	122.9	169.7	209.5	0.00	0.00	0.00
2,160.0	13.84	54.09	2,136.8	128.5	177.4	219.1	0.00	0.00	0.00
2,200.0	13.84	54.09	2,175.6	134.1	185.2	228.7	0.00	0.00	0.00
2,240.0	13.84	54.09	2,214.5	139.7	192.9	238.2	0.00	0.00	0.00
2,280.0	13.84	54.09	2,253.3	145.3	200.7	247.8	0.00	0.00	0.00
2,320.0	13.84	54.09	2,292.1	150.9	208.5	257.4	0.00	0.00	0.00
2,360.0	13.84	54.09	2,331.0	156.6	216.2	266.9	0.00	0.00	0.00
2,400.0	13.84	54.09	2,369.8	162.2	224.0	276.5	0.00	0.00	0.00
2,440.0	13.84	54.09	2,408.7	167.8	231.7	286.1	0.00	0.00	0.00
2,480.0	13.84	54.09	2,447.5	173.4	239.5	295.7	0.00	0.00	0.00
2,520.0	13.84	54.09	2,486.3	179.0	247.2	305.2	0.00	0.00	0.00
2,560.0	13.84	54.09	2,525.2	184.6	255.0	314.8	0.00	0.00	0.00
2,600.0	13.84	54.09	2,564.0	190.2	262.7	324.4	0.00	0.00	0.00
2,640.0	13.84	54.09	2,602.8	195.9	270.5	333.9	0.00	0.00	0.00
2,680.0	13.84	54.09	2,641.7	201.5	278.2	343.5	0.00	0.00	0.00
2,720.0	13.84	54.09	2,680.5	207.1	286.0	353.1	0.00	0.00	0.00
2,760.0	13.84	54.09	2,719.4	212.7	293.7	362.7	0.00	0.00	0.00
2,800.0	13.84	54.09	2,758.2	218.3	301.5	372.2	0.00	0.00	0.00
2,840.0	13.84	54.09	2,797.0	223.9	309.2	381.8	0.00	0.00	0.00
2,880.0	13.84	54.09	2,835.9	229.5	317.0	391.4	0.00	0.00	0.00
2,920.0	13.84	54.09	2,874.7	235.2	324.7	400.9	0.00	0.00	0.00
2,960.0	13.84	54.09	2,913.6	240.8	332.5	410.5	0.00	0.00	0.00
3,000.0	13.84	54.09	2,952.4	246.4	340.2	420.1	0.00	0.00	0.00
3,040.0	13.84	54.09	2,991.2	252.0	348.0	429.6	0.00	0.00	0.00
3,080.0	13.84	54.09	3,030.1	257.6	355.7	439.2	0.00	0.00	0.00
3,120.0	13.84	54.09	3,068.9	263.2	363.5	448.8	0.00	0.00	0.00
3,160.0	13.84	54.09	3,107.7	268.8	371.2	458.4	0.00	0.00	0.00
3,200.0	13.84	54.09	3,146.6	274.5	379.0	467.9	0.00	0.00	0.00
3,240.0	13.84	54.09	3,185.4	280.1	386.8	477.5	0.00	0.00	0.00
3,280.0	13.84	54.09	3,224.3	285.7	394.5	487.1	0.00	0.00	0.00
3,320.0	13.84	54.09	3,263.1	291.3	402.3	496.6	0.00	0.00	0.00
3,360.0	13.84	54.09	3,301.9	296.9	410.0	506.2	0.00	0.00	0.00
3,400.0	13.84	54.09	3,340.8	302.5	417.8	515.8	0.00	0.00	0.00
3,440.0	13.84	54.09	3,379.6	308.1	425.5	525.4	0.00	0.00	0.00
3,480.0	13.84	54.09	3,418.4	313.7	433.3	534.9	0.00	0.00	0.00
3,520.0	13.84	54.09	3,457.3	319.4	441.0	544.5	0.00	0.00	0.00
3,560.0	13.84	54.09	3,496.1	325.0	448.8	554.1	0.00	0.00	0.00
3,600.0	13.84	54.09	3,535.0	330.6	456.5	563.6	0.00	0.00	0.00
3,640.0	13.84	54.09	3,573.8	336.2	464.3	573.2	0.00	0.00	0.00
3,680.0	13.84	54.09	3,612.6	341.8	472.0	582.8	0.00	0.00	0.00
3,720.0	13.84	54.09	3,651.5	347.4	479.8	592.4	0.00	0.00	0.00
3,760.0	13.84	54.09	3,690.3	353.0	487.5	601.9	0.00	0.00	0.00
3,800.0	13.84	54.09	3,729.1	358.7	495.3	611.5	0.00	0.00	0.00
3,840.0	13.84	54.09	3,768.0	364.3	503.0	621.1	0.00	0.00	0.00
3,880.0	13.84	54.09	3,806.8	369.9	510.8	630.6	0.00	0.00	0.00
3,920.0	13.84	54.09	3,845.7	375.5	518.5	640.2	0.00	0.00	0.00
3,960.0	13.84	54.09	3,884.5	381.1	526.3	649.8	0.00	0.00	0.00
4,000.0	13.84	54.09	3,923.3	386.7	534.0	659.4	0.00	0.00	0.00
4,040.0	13.84	54.09	3,962.2	392.3	541.8	668.9	0.00	0.00	0.00
4,080.0	13.84	54.09	4,001.0	398.0	549.5	678.5	0.00	0.00	0.00
4,120.0	13.84	54.09	4,039.9	403.6	557.3	688.1	0.00	0.00	0.00

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<b>Project:</b>	SEC.15-T4N-R65W	<b>MD Reference:</b>	WELL @ 4738.0ft (Original Well Elev)
<b>Site:</b>	Boiko PC G15-28D Pad Sec.15-T4N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Boiko PC G15-29D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Boiko PC G15-29D Plan #2 (4-11-11)		

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	13.84	54.09	4,078.7	409.2	565.0	697.6	0.00	0.00	0.00
4,200.0	13.84	54.09	4,117.5	414.8	572.8	707.2	0.00	0.00	0.00
4,240.0	13.84	54.09	4,156.4	420.4	580.6	716.8	0.00	0.00	0.00
4,280.0	13.84	54.09	4,195.2	426.0	588.3	726.4	0.00	0.00	0.00
4,320.0	13.84	54.09	4,234.0	431.6	596.1	735.9	0.00	0.00	0.00
4,360.0	13.84	54.09	4,272.9	437.2	603.8	745.5	0.00	0.00	0.00
4,400.0	13.84	54.09	4,311.7	442.9	611.6	755.1	0.00	0.00	0.00
4,440.0	13.84	54.09	4,350.6	448.5	619.3	764.6	0.00	0.00	0.00
4,480.0	13.84	54.09	4,389.4	454.1	627.1	774.2	0.00	0.00	0.00
4,520.0	13.84	54.09	4,428.2	459.7	634.8	783.8	0.00	0.00	0.00
4,560.0	13.84	54.09	4,467.1	465.3	642.6	793.4	0.00	0.00	0.00
4,600.0	13.84	54.09	4,505.9	470.9	650.3	802.9	0.00	0.00	0.00
4,608.9	13.84	54.09	4,514.5	472.2	652.0	805.0	0.00	0.00	0.00
4,640.0	13.22	54.09	4,544.8	476.4	657.9	812.3	2.00	-2.00	0.00
4,680.0	12.42	54.09	4,583.8	481.7	665.1	821.2	2.00	-2.00	0.00
4,720.0	11.62	54.09	4,622.9	486.5	671.9	829.5	2.00	-2.00	0.00
4,760.0	10.82	54.09	4,662.1	491.1	678.2	837.3	2.00	-2.00	0.00
4,800.0	10.02	54.09	4,701.5	495.3	684.0	844.6	2.00	-2.00	0.00
4,840.0	9.22	54.09	4,740.9	499.3	689.5	851.2	2.00	-2.00	0.00
4,880.0	8.42	54.09	4,780.5	502.9	694.4	857.4	2.00	-2.00	0.00
4,920.0	7.62	54.09	4,820.1	506.1	698.9	863.0	2.00	-2.00	0.00
4,960.0	6.82	54.09	4,859.7	509.1	703.0	868.0	2.00	-2.00	0.00
5,000.0	6.02	54.09	4,899.5	511.7	706.6	872.5	2.00	-2.00	0.00
5,040.0	5.22	54.09	4,939.3	514.0	709.8	876.4	2.00	-2.00	0.00
5,080.0	4.42	54.09	4,979.2	516.0	712.5	879.7	2.00	-2.00	0.00
5,120.0	3.62	54.09	5,019.1	517.6	714.8	882.5	2.00	-2.00	0.00
5,160.0	2.82	54.09	5,059.0	518.9	716.6	884.8	2.00	-2.00	0.00
5,200.0	2.02	54.09	5,099.0	519.9	718.0	886.5	2.00	-2.00	0.00
5,240.0	1.22	54.09	5,138.9	520.6	718.9	887.6	2.00	-2.00	0.00
5,280.0	0.42	54.09	5,178.9	520.9	719.4	888.2	2.00	-2.00	0.00
5,301.1	0.00	0.00	5,200.0	521.0	719.4	888.3	2.00	-2.00	-256.79
TARGET BHL 75'FNL, 1320'FWL									
5,320.0	0.00	0.00	5,218.9	521.0	719.4	888.3	0.00	0.00	0.00
5,360.0	0.00	0.00	5,258.9	521.0	719.4	888.3	0.00	0.00	0.00
5,400.0	0.00	0.00	5,298.9	521.0	719.4	888.3	0.00	0.00	0.00
5,440.0	0.00	0.00	5,338.9	521.0	719.4	888.3	0.00	0.00	0.00
5,480.0	0.00	0.00	5,378.9	521.0	719.4	888.3	0.00	0.00	0.00
5,520.0	0.00	0.00	5,418.9	521.0	719.4	888.3	0.00	0.00	0.00
5,560.0	0.00	0.00	5,458.9	521.0	719.4	888.3	0.00	0.00	0.00
5,600.0	0.00	0.00	5,498.9	521.0	719.4	888.3	0.00	0.00	0.00
5,640.0	0.00	0.00	5,538.9	521.0	719.4	888.3	0.00	0.00	0.00
5,680.0	0.00	0.00	5,578.9	521.0	719.4	888.3	0.00	0.00	0.00
5,720.0	0.00	0.00	5,618.9	521.0	719.4	888.3	0.00	0.00	0.00
5,760.0	0.00	0.00	5,658.9	521.0	719.4	888.3	0.00	0.00	0.00
5,800.0	0.00	0.00	5,698.9	521.0	719.4	888.3	0.00	0.00	0.00
5,840.0	0.00	0.00	5,738.9	521.0	719.4	888.3	0.00	0.00	0.00
5,880.0	0.00	0.00	5,778.9	521.0	719.4	888.3	0.00	0.00	0.00
5,920.0	0.00	0.00	5,818.9	521.0	719.4	888.3	0.00	0.00	0.00
5,960.0	0.00	0.00	5,858.9	521.0	719.4	888.3	0.00	0.00	0.00
6,000.0	0.00	0.00	5,898.9	521.0	719.4	888.3	0.00	0.00	0.00
6,040.0	0.00	0.00	5,938.9	521.0	719.4	888.3	0.00	0.00	0.00
6,080.0	0.00	0.00	5,978.9	521.0	719.4	888.3	0.00	0.00	0.00
6,120.0	0.00	0.00	6,018.9	521.0	719.4	888.3	0.00	0.00	0.00
6,160.0	0.00	0.00	6,058.9	521.0	719.4	888.3	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Boiko PC G15-29D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 4738.0ft (Original Well Elev)
<b>Project:</b>	SEC.15-T4N-R65W	<b>MD Reference:</b>	WELL @ 4738.0ft (Original Well Elev)
<b>Site:</b>	Boiko PC G15-28D Pad Sec.15-T4N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Boiko PC G15-29D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Boiko PC G15-29D Plan #2 (4-11-11)		

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	6,098.9	521.0	719.4	888.3	0.00	0.00	0.00
6,240.0	0.00	0.00	6,138.9	521.0	719.4	888.3	0.00	0.00	0.00
6,280.0	0.00	0.00	6,178.9	521.0	719.4	888.3	0.00	0.00	0.00
6,320.0	0.00	0.00	6,218.9	521.0	719.4	888.3	0.00	0.00	0.00
6,360.0	0.00	0.00	6,258.9	521.0	719.4	888.3	0.00	0.00	0.00
6,400.0	0.00	0.00	6,298.9	521.0	719.4	888.3	0.00	0.00	0.00
6,440.0	0.00	0.00	6,338.9	521.0	719.4	888.3	0.00	0.00	0.00
6,480.0	0.00	0.00	6,378.9	521.0	719.4	888.3	0.00	0.00	0.00
6,520.0	0.00	0.00	6,418.9	521.0	719.4	888.3	0.00	0.00	0.00
6,560.0	0.00	0.00	6,458.9	521.0	719.4	888.3	0.00	0.00	0.00
6,600.0	0.00	0.00	6,498.9	521.0	719.4	888.3	0.00	0.00	0.00
6,640.0	0.00	0.00	6,538.9	521.0	719.4	888.3	0.00	0.00	0.00
6,680.0	0.00	0.00	6,578.9	521.0	719.4	888.3	0.00	0.00	0.00
6,720.0	0.00	0.00	6,618.9	521.0	719.4	888.3	0.00	0.00	0.00
6,760.0	0.00	0.00	6,658.9	521.0	719.4	888.3	0.00	0.00	0.00
6,800.0	0.00	0.00	6,698.9	521.0	719.4	888.3	0.00	0.00	0.00
6,840.0	0.00	0.00	6,738.9	521.0	719.4	888.3	0.00	0.00	0.00
6,880.0	0.00	0.00	6,778.9	521.0	719.4	888.3	0.00	0.00	0.00
6,919.1	0.00	0.00	6,818.0	521.0	719.4	888.3	0.00	0.00	0.00
NIOBRARA - TARGET CIRCLE 75'FNL & 1320'FWL									
6,920.0	0.00	0.00	6,818.9	521.0	719.4	888.3	0.00	0.00	0.00
6,960.0	0.00	0.00	6,858.9	521.0	719.4	888.3	0.00	0.00	0.00
7,000.0	0.00	0.00	6,898.9	521.0	719.4	888.3	0.00	0.00	0.00
7,040.0	0.00	0.00	6,938.9	521.0	719.4	888.3	0.00	0.00	0.00
7,080.0	0.00	0.00	6,978.9	521.0	719.4	888.3	0.00	0.00	0.00
7,120.0	0.00	0.00	7,018.9	521.0	719.4	888.3	0.00	0.00	0.00
7,160.0	0.00	0.00	7,058.9	521.0	719.4	888.3	0.00	0.00	0.00
7,200.0	0.00	0.00	7,098.9	521.0	719.4	888.3	0.00	0.00	0.00
7,237.1	0.00	0.00	7,136.0	521.0	719.4	888.3	0.00	0.00	0.00
CODELL									
7,240.0	0.00	0.00	7,138.9	521.0	719.4	888.3	0.00	0.00	0.00
7,280.0	0.00	0.00	7,178.9	521.0	719.4	888.3	0.00	0.00	0.00
7,320.0	0.00	0.00	7,218.9	521.0	719.4	888.3	0.00	0.00	0.00
7,360.0	0.00	0.00	7,258.9	521.0	719.4	888.3	0.00	0.00	0.00
7,400.0	0.00	0.00	7,298.9	521.0	719.4	888.3	0.00	0.00	0.00
7,440.0	0.00	0.00	7,338.9	521.0	719.4	888.3	0.00	0.00	0.00
7,480.0	0.00	0.00	7,378.9	521.0	719.4	888.3	0.00	0.00	0.00
7,520.0	0.00	0.00	7,418.9	521.0	719.4	888.3	0.00	0.00	0.00
7,560.0	0.00	0.00	7,458.9	521.0	719.4	888.3	0.00	0.00	0.00
7,600.0	0.00	0.00	7,498.9	521.0	719.4	888.3	0.00	0.00	0.00
7,636.1	0.00	0.00	7,535.0	521.0	719.4	888.3	0.00	0.00	0.00
D-SAND									
7,640.0	0.00	0.00	7,538.9	521.0	719.4	888.3	0.00	0.00	0.00
7,680.0	0.00	0.00	7,578.9	521.0	719.4	888.3	0.00	0.00	0.00
7,705.1	0.00	0.00	7,604.0	521.0	719.4	888.3	0.00	0.00	0.00
J-SAND									
7,720.0	0.00	0.00	7,618.9	521.0	719.4	888.3	0.00	0.00	0.00
7,760.0	0.00	0.00	7,658.9	521.0	719.4	888.3	0.00	0.00	0.00
7,800.0	0.00	0.00	7,698.9	521.0	719.4	888.3	0.00	0.00	0.00
7,840.0	0.00	0.00	7,738.9	521.0	719.4	888.3	0.00	0.00	0.00
7,855.1	0.00	0.00	7,754.0	521.0	719.4	888.3	0.00	0.00	0.00
HARD LINES 75'N OF BHL									



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Boiko PC G15-29D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 4738.0ft (Original Well Elev)
<b>Project:</b>	SEC.15-T4N-R65W	<b>MD Reference:</b>	WELL @ 4738.0ft (Original Well Elev)
<b>Site:</b>	Boiko PC G15-28D Pad Sec.15-T4N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Boiko PC G15-29D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Boiko PC G15-29D Plan #2 (4-11-11)		

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 BHL 75'FNL	0.00	0.00	5,200.0	521.0	719.4	1,360,367.69	3,235,934.93	40.319520	-104.653860
- plan hits target center									
- Point									
TARGET CIRCLE 75'	0.00	0.00	6,818.0	521.0	719.4	1,360,367.69	3,235,934.93	40.319520	-104.653860
- plan hits target center									
- Circle (radius 75.0)									
HARD LINES 75'N OF	0.00	0.00	7,754.0	596.0	819.4	1,360,443.65	3,236,034.17	40.319726	-104.653502
- plan misses target center by 125.0ft at 7855.1ft MD (7754.0 TVD, 521.0 N, 719.4 E)									
- Polygon									
Point 1			7,754.0	0.0	0.0	1,360,443.65	3,236,034.17		
Point 2			7,754.0	0.0	-200.0	1,360,441.75	3,235,834.18		

Casing Points					
Measured Depth	Vertical Depth			Casing Diameter	Hole Diameter
(ft)	(ft)		Name	(")	(")
650.0	650.0	8 5/8"		8-5/8	12-1/4

Formations					
Measured Depth	Vertical Depth			Dip	Dip Direction
(ft)	(ft)		Name	(°)	(°)
6,919.1	6,818.0	NIOBRARA		0.00	
7,237.1	7,136.0	CODELL		0.00	
7,636.1	7,535.0	D-SAND		0.00	
7,705.1	7,604.0	J-SAND		0.00	