



Project: Mesa County, CO  
 Site: Bruton 30-03 Pad  
 Well: Bruton 30-03W  
 Wellbore: Wellbore #1  
 Design: Design #1  
 Latitude: 39.252683  
 Longitude: -107.814261  
 Ground Level: 7512.0  
 well @ 7534.0usft (H&P #290)



#### PROJECT DETAILS: Mesa County, CO

Geodetic System: US State Plane 1983  
 Datum: North American Datum 1983  
 Ellipsoid: GRS 1980  
 Zone: Colorado Central Zone  
 System Datum: Mean Sea Level

#### REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Bruton 30-03W, True North  
 Vertical (TVD) Reference: well @ 7534.0usft (H&P #290)  
 Section (VS) Reference: Slot - (0.0N, 0.0E)  
 Measured Depth Reference: well @ 7534.0usft (H&P #290)  
 Calculation Method: Minimum Curvature

#### WELL DETAILS: Bruton 30-03W

Ground Level: 7512.0  
 +N-S +E-W Northing Easting Latitude Longitude  
 0.0 0.0 1525270.82 2344727.71 39.252683 -107.814261

#### DESIGN TARGET DETAILS

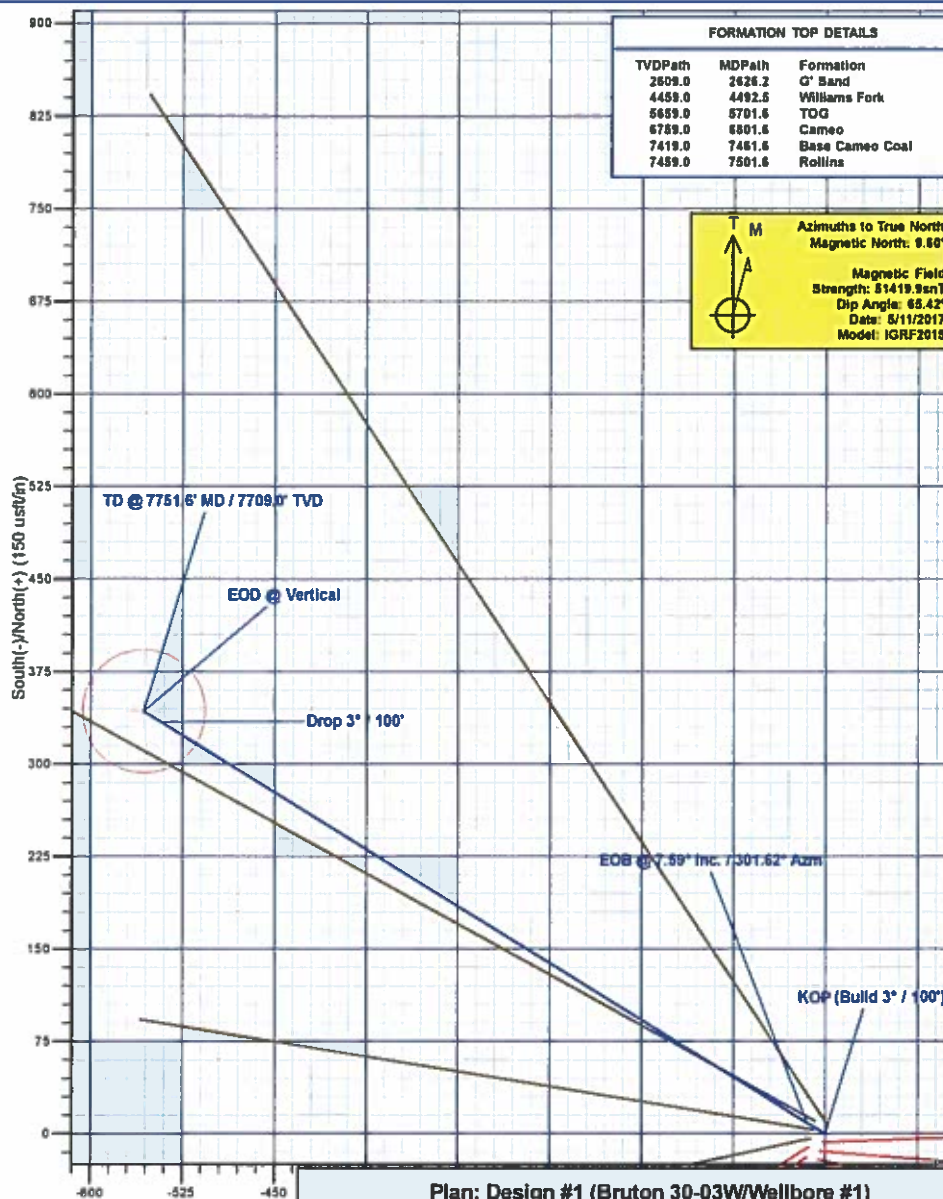
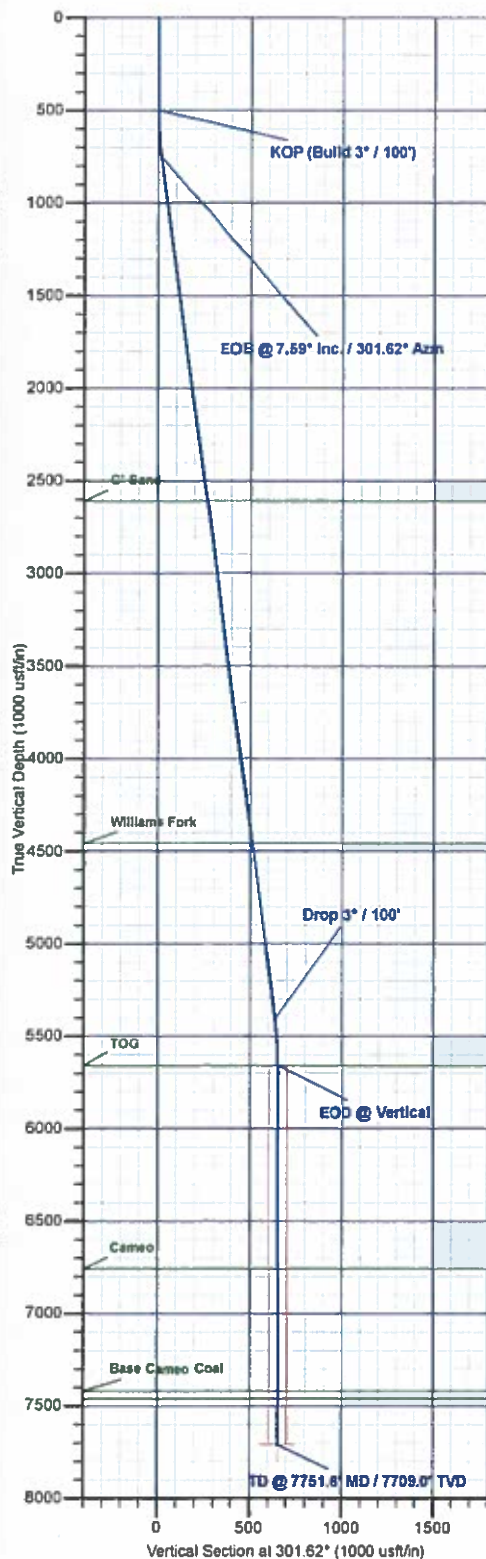
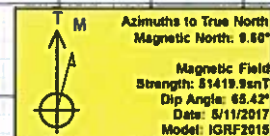
Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
PBHL - Bruton 30-03W	7709.0	342.7	-556.7	1525627.63	2344179.91	39.253624	-107.816227

#### SECTION DETAILS

MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	VSect	Annotation
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.0	KOP (Build 3° / 100')
753.0	7.59	301.62	752.3	4.8	-14.3	3.00	301.62	16.7	EOB @ 7.59° Inc. / 301.62° Azm
5448.6	7.59	301.62	5406.7	334.0	-542.5	0.00	0.00	637.0	Drop 3° / 100'
5701.6	0.00	0.00	5659.0	342.7	-556.7	3.00	180.00	653.5	EOD @ Vertical
7751.5	0.00	0.00	7709.0	342.7	-556.7	0.00	0.00	653.5	TD @ 7751.5' MD / 7709.0' TVD

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
2609.0	2626.2	G' Sand
4459.0	4492.5	Williams Fork
5659.0	5701.6	TOG
6789.0	6801.6	Cameo
7419.0	7461.6	Base Cameo Coal
7459.0	7501.6	Rollins



Plan: Design #1 (Bruton 30-03W/Wellbore #1)

Created By: Will Jircik Date: 10:46, May 15 2017



# **Laramie Energy, LLC**

**Mesa County, CO**

**Bruton 30-03 Pad**

**Bruton 30-03W**

**Wellbore #1**

**Plan: Design #1**

## **QES Well Planning Report**

**12 May, 2017**





## Well Planning Report



<b>Database:</b>	EDM5002	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-03W
<b>Company:</b>	Laramie Energy, LLC	<b>TVD Reference:</b>	well @ 7534.0usft (H&P #290)
<b>Project:</b>	Mesa County, CO	<b>MD Reference:</b>	well @ 7534.0usft (H&P #290)
<b>Site:</b>	Bruton 30-03 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Bruton 30-03W	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

Project		Mesa County, CO	
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site		Bruton 30-03 Pad			
Site Position:		Northing:	1,525,281.27 usft	Latitude:	39.252711
From:	Lat/Long	Easting:	2,344,720.08 usft	Longitude:	-107.814289
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.46

Well	Bruton 30-03W					
Well Position	+N/-S	-10.2 usft	Northing:	1,525,270.82 usft	Latitude:	39.252683
	+E/-W	7.9 usft	Easting:	2,344,727.72 usft	Longitude:	-107.814261
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	7,512.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/11/2017	9.60	65.42	51,420

Design	Design #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	301.62

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.00	0.00	
753.0	7.59	301.62	752.3	8.8	-14.3	3.00	3.00	0.00	301.62	
5,448.6	7.59	301.62	5,408.7	334.0	-542.5	0.00	0.00	0.00	0.00	
5,701.6	0.00	0.00	5,659.0	342.7	-556.7	3.00	-3.00	0.00	180.00	
7,751.6	0.00	0.00	7,709.0	342.7	-556.7	0.00	0.00	0.00	0.00	PBHL - Bruton 30-03\



# Well Planning Report



<b>Database:</b>	EDM5002	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-03W
<b>Company:</b>	Laramie Energy, LLC	<b>TVD Reference:</b>	well @ 7534.0usft (H&P #290)
<b>Project:</b>	Mesa County, CO	<b>MD Reference:</b>	well @ 7534.0usft (H&P #290)
<b>Site:</b>	Bruton 30-03 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Bruton 30-03W	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

## Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	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
300.0	0.00	0.00	300.0	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
KOP (Build 3° / 100')									
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	3.00	301.62	600.0	1.4	-2.2	2.6	3.00	3.00	0.00
700.0	6.00	301.62	699.6	5.5	-8.9	10.5	3.00	3.00	0.00
EOB @ 7.59° Inc. / 301.62° Azm									
753.0	7.59	301.62	752.3	8.8	-14.3	16.7	3.00	3.00	0.00
800.0	7.59	301.62	798.8	12.0	-19.5	22.9	0.00	0.00	0.00
900.0	7.59	301.62	898.0	19.0	-30.8	36.2	0.00	0.00	0.00
1,000.0	7.59	301.62	997.1	25.9	-42.0	49.4	0.00	0.00	0.00
1,100.0	7.59	301.62	1,096.2	32.8	-53.3	62.6	0.00	0.00	0.00
1,200.0	7.59	301.62	1,195.3	39.7	-64.5	75.8	0.00	0.00	0.00
1,300.0	7.59	301.62	1,294.5	46.7	-75.6	89.0	0.00	0.00	0.00
1,400.0	7.59	301.62	1,393.6	53.6	-87.0	102.2	0.00	0.00	0.00
1,500.0	7.59	301.62	1,492.7	60.5	-98.3	115.4	0.00	0.00	0.00
8 5/8"									
1,522.0	7.59	301.62	1,514.5	62.0	-100.8	118.3	0.00	0.00	0.00
1,600.0	7.59	301.62	1,591.8	67.4	-109.5	128.6	0.00	0.00	0.00
1,700.0	7.59	301.62	1,691.0	74.4	-120.8	141.8	0.00	0.00	0.00
1,800.0	7.59	301.62	1,790.1	81.3	-132.0	155.0	0.00	0.00	0.00
1,900.0	7.59	301.62	1,889.2	88.2	-143.3	168.3	0.00	0.00	0.00
2,000.0	7.59	301.62	1,988.3	95.1	-154.5	181.5	0.00	0.00	0.00
2,100.0	7.59	301.62	2,087.5	102.1	-165.8	194.7	0.00	0.00	0.00
2,200.0	7.59	301.62	2,186.6	109.0	-177.0	207.9	0.00	0.00	0.00
2,300.0	7.59	301.62	2,285.7	115.9	-188.3	221.1	0.00	0.00	0.00
2,400.0	7.59	301.62	2,384.8	122.8	-199.5	234.3	0.00	0.00	0.00
2,500.0	7.59	301.62	2,484.0	129.8	-210.8	247.5	0.00	0.00	0.00
2,600.0	7.59	301.62	2,583.1	136.7	-222.0	260.7	0.00	0.00	0.00
G' Sand									
2,626.2	7.59	301.62	2,609.0	138.5	-225.0	264.2	0.00	0.00	0.00
2,700.0	7.59	301.62	2,682.2	143.6	-233.3	273.9	0.00	0.00	0.00
2,800.0	7.59	301.62	2,781.3	150.5	-244.5	287.1	0.00	0.00	0.00
2,900.0	7.59	301.62	2,880.4	157.5	-255.8	300.4	0.00	0.00	0.00
3,000.0	7.59	301.62	2,979.6	164.4	-267.0	313.6	0.00	0.00	0.00
3,100.0	7.59	301.62	3,078.7	171.3	-278.3	326.8	0.00	0.00	0.00
3,200.0	7.59	301.62	3,177.8	178.2	-289.5	340.0	0.00	0.00	0.00
3,300.0	7.59	301.62	3,276.9	185.2	-300.8	353.2	0.00	0.00	0.00
3,400.0	7.59	301.62	3,376.1	192.1	-312.0	366.4	0.00	0.00	0.00
3,500.0	7.59	301.62	3,475.2	199.0	-323.3	379.6	0.00	0.00	0.00
3,600.0	7.59	301.62	3,574.3	205.9	-334.5	392.8	0.00	0.00	0.00
3,700.0	7.59	301.62	3,673.4	212.9	-345.8	406.0	0.00	0.00	0.00
3,800.0	7.59	301.62	3,772.6	219.8	-357.0	419.2	0.00	0.00	0.00
3,900.0	7.59	301.62	3,871.7	226.7	-368.3	432.5	0.00	0.00	0.00
4,000.0	7.59	301.62	3,970.8	233.6	-379.5	445.7	0.00	0.00	0.00
4,100.0	7.59	301.62	4,069.9	240.6	-390.8	458.9	0.00	0.00	0.00
4,200.0	7.59	301.62	4,169.1	247.5	-402.0	472.1	0.00	0.00	0.00
4,300.0	7.59	301.62	4,268.2	254.4	-413.3	485.3	0.00	0.00	0.00
4,400.0	7.59	301.62	4,367.3	261.3	-424.5	498.5	0.00	0.00	0.00
Williams Fork									
4,492.5	7.59	301.62	4,459.0	267.8	-434.9	510.7	0.00	0.00	0.00





## Well Planning Report



<b>Database:</b>	EDM5002	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-03W
<b>Company:</b>	Laramie Energy, LLC	<b>TVD Reference:</b>	well @ 7534.0usft (H&P #290)
<b>Project:</b>	Mesa County, CO	<b>MD Reference:</b>	well @ 7534.0usft (H&P #290)
<b>Site:</b>	Bruton 30-03 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Bruton 30-03W	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

## Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,500.0	7.59	301.62	4,466.4	268.3	-435.8	511.7	0.00	0.00	0.00
4,600.0	7.59	301.62	4,565.5	275.2	-447.0	524.9	0.00	0.00	0.00
4,700.0	7.59	301.62	4,664.7	282.1	-458.3	538.1	0.00	0.00	0.00
4,800.0	7.59	301.62	4,763.8	289.0	-469.5	551.3	0.00	0.00	0.00
4,900.0	7.59	301.62	4,862.9	296.0	-480.8	564.6	0.00	0.00	0.00
5,000.0	7.59	301.62	4,962.0	302.9	-492.0	577.8	0.00	0.00	0.00
5,100.0	7.59	301.62	5,061.2	309.8	-503.2	591.0	0.00	0.00	0.00
5,200.0	7.59	301.62	5,160.3	316.8	-514.5	604.2	0.00	0.00	0.00
5,300.0	7.59	301.62	5,259.4	323.7	-525.7	617.4	0.00	0.00	0.00
5,400.0	7.59	301.62	5,358.5	330.6	-537.0	630.6	0.00	0.00	0.00
<b>Drop 3° / 100'</b>									
5,448.6	7.59	301.62	5,406.7	334.0	-542.5	637.0	0.00	0.00	0.00
5,500.0	6.05	301.62	5,457.7	337.2	-547.7	643.1	3.00	-3.00	0.00
5,600.0	3.05	301.62	5,557.4	341.3	-554.4	651.1	3.00	-3.00	0.00
5,700.0	0.05	301.62	5,657.4	342.7	-556.7	653.8	3.00	-3.00	0.00
<b>EOD @ Vertical - TOG</b>									
5,701.6	0.00	0.00	5,659.0	342.7	-556.7	653.8	3.00	-3.00	0.00
5,800.0	0.00	0.00	5,757.4	342.7	-556.7	653.8	0.00	0.00	0.00
5,900.0	0.00	0.00	5,857.4	342.7	-556.7	653.8	0.00	0.00	0.00
6,000.0	0.00	0.00	5,957.4	342.7	-556.7	653.8	0.00	0.00	0.00
6,100.0	0.00	0.00	6,057.4	342.7	-556.7	653.8	0.00	0.00	0.00
6,200.0	0.00	0.00	6,157.4	342.7	-556.7	653.8	0.00	0.00	0.00
6,300.0	0.00	0.00	6,257.4	342.7	-556.7	653.8	0.00	0.00	0.00
6,400.0	0.00	0.00	6,357.4	342.7	-556.7	653.8	0.00	0.00	0.00
6,500.0	0.00	0.00	6,457.4	342.7	-556.7	653.8	0.00	0.00	0.00
6,600.0	0.00	0.00	6,557.4	342.7	-556.7	653.8	0.00	0.00	0.00
6,700.0	0.00	0.00	6,657.4	342.7	-556.7	653.8	0.00	0.00	0.00
6,800.0	0.00	0.00	6,757.4	342.7	-556.7	653.8	0.00	0.00	0.00
<b>Cameo</b>									
6,801.6	0.00	0.00	6,759.0	342.7	-556.7	653.8	0.00	0.00	0.00
6,900.0	0.00	0.00	6,857.4	342.7	-556.7	653.8	0.00	0.00	0.00
7,000.0	0.00	0.00	6,957.4	342.7	-556.7	653.8	0.00	0.00	0.00
7,100.0	0.00	0.00	7,057.4	342.7	-556.7	653.8	0.00	0.00	0.00
7,200.0	0.00	0.00	7,157.4	342.7	-556.7	653.8	0.00	0.00	0.00
7,300.0	0.00	0.00	7,257.4	342.7	-556.7	653.8	0.00	0.00	0.00
7,400.0	0.00	0.00	7,357.4	342.7	-556.7	653.8	0.00	0.00	0.00
<b>Base Cameo Coal</b>									
7,461.6	0.00	0.00	7,419.0	342.7	-556.7	653.8	0.00	0.00	0.00
7,500.0	0.00	0.00	7,457.4	342.7	-556.7	653.8	0.00	0.00	0.00
<b>Rollins</b>									
7,501.6	0.00	0.00	7,459.0	342.7	-556.7	653.8	0.00	0.00	0.00
7,600.0	0.00	0.00	7,557.4	342.7	-556.7	653.8	0.00	0.00	0.00
7,700.0	0.00	0.00	7,657.4	342.7	-556.7	653.8	0.00	0.00	0.00
<b>TD @ 7761.6' MD / 7709.0' TVD</b>									
7,751.6	0.00	0.00	7,709.0	342.7	-556.7	653.8	0.00	0.00	0.00



## Well Planning Report



<b>Database:</b>	EDM5002	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-03W
<b>Company:</b>	Laramie Energy, LLC	<b>TVD Reference:</b>	well @ 7534 0usft (H&P #290)
<b>Project:</b>	Mesa County, CO	<b>MD Reference:</b>	well @ 7534 0usft (H&P #290)
<b>Site:</b>	Bruton 30-03 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Bruton 30-03W	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

## Design Targets

## Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- Shape									
PBHL - Bruton 30-03W	0.00	0.00	7,709.0	342.7	-556.7	1,525,627.64	2,344,179.91	39.253624	-107.816227
- plan hits target center									
- Point									

## Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,522.0	1,514.5	8 5/8"	8-5/8	11

## Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,626.2	2,609.0	G' Sand			
4,492.5	4,459.0	Williams Fork			
5,701.6	5,659.0	TOG			
6,801.6	6,759.0	Cameo			
7,461.6	7,419.0	Base Cameo Coal			
7,501.6	7,459.0	Rollins			

## Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
500.0	500.0	0.0	0.0	KOP (Build 3" / 100')
753.0	752.3	8.8	-14.3	EOB @ 7.59° Inc. / 301.62° Azm
5,448.6	5,406.7	334.0	-542.5	Drop 3" / 100'
5,701.6	5,659.0	342.7	-556.7	EOD @ Vertical
7,751.6	7,709.0	342.7	-556.7	TD @ 7751.6' MD / 7709.0' TVD