



Project: Mesa County, CO  
 Site: Bruton 30-10 Pad  
 Well: Bruton 30-19E  
 Wellbore: Wellbore #1  
 Design: Design #1  
 Latitude: 39.248097  
 Longitude: -107.808836  
 Ground Level: 7643.0  
 well @ 7665.0usft (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 30-19E, True North  
 Vertical (TVD) Reference: well @ 7665.0usft (H&P #290)  
 Section (VS) Reference: Slot - (0.0N, 0.0E)  
 Measured Depth Reference: well @ 7665.0usft (H&P #290)  
 Calculation Method: Minimum Curvature

**WELL DETAILS: Bruton 30-19E**

Ground Level: 7643.0  
 +N-S +E-W Northing Easting Latitude Longitude  
 0.0 0.0 1523561.98 2346221.00 39.248097 -107.808836

**DESIGN TARGET DETAILS**

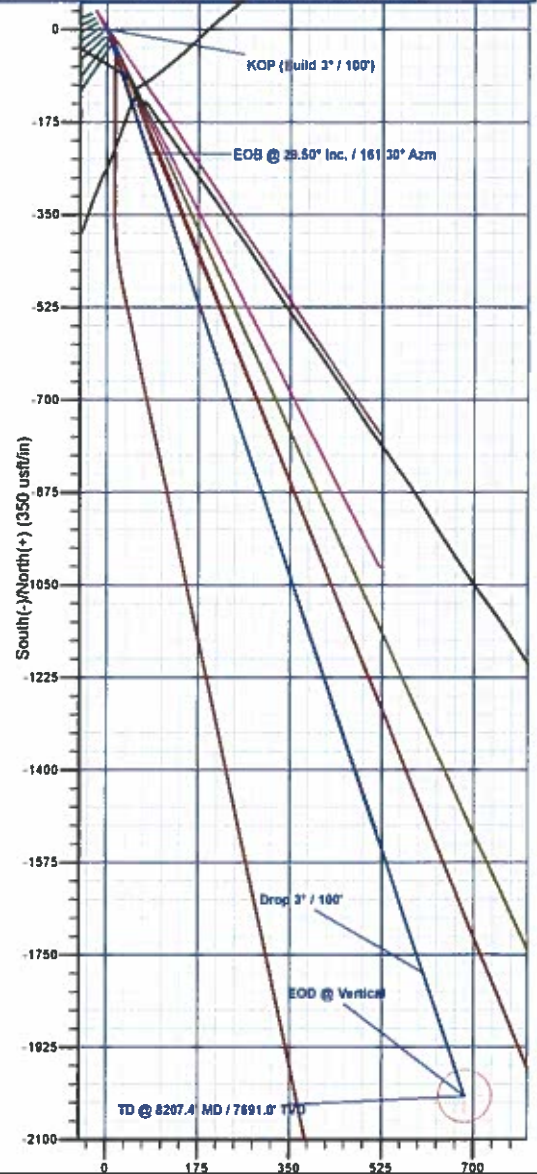
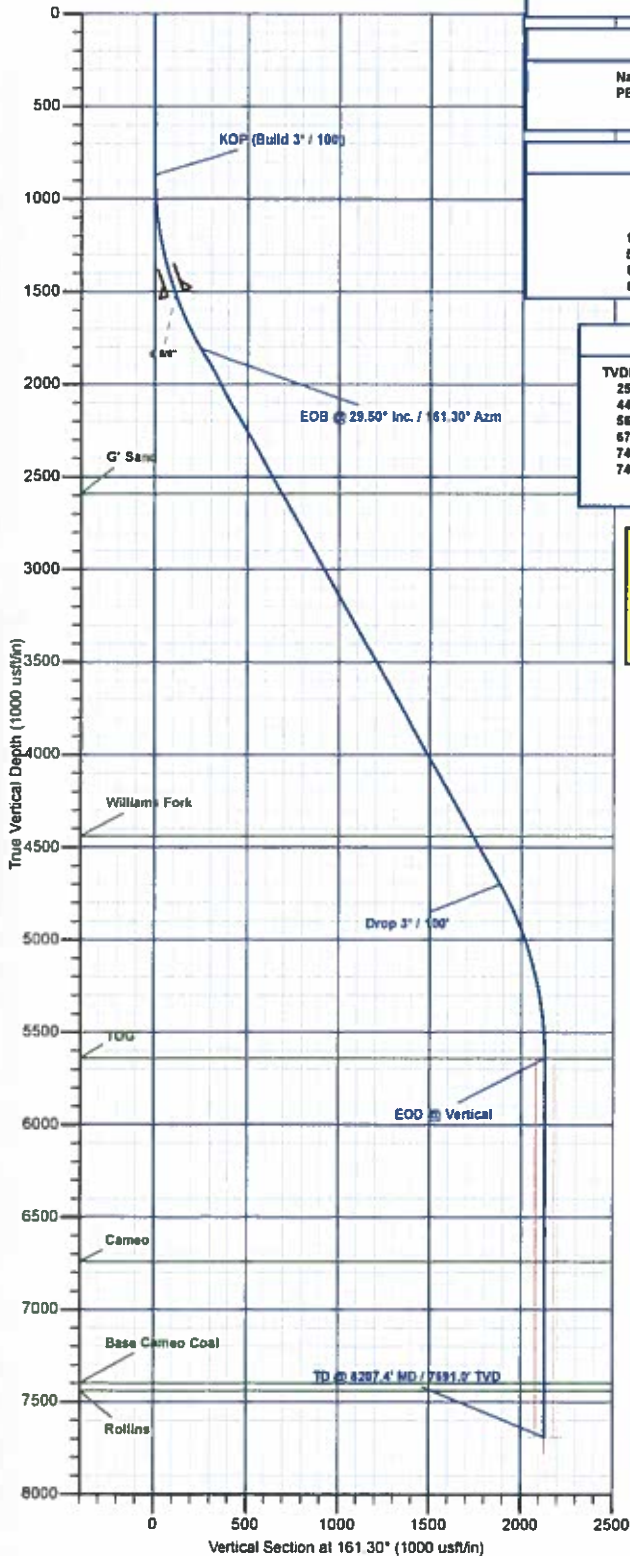
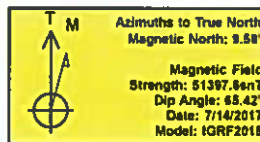
Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
PBHL - Bruton 30-19E	7691.0	-2018.1	683.1	1521527.16	2346852.61	39.242556	-107.806424

**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	
870.0	0.00	0.00	870.0	0.0	0.0	0.00	0.00	0.0	KOP (Build 3" / 100')
1853.5	29.50	161.30	1810.6	-234.6	79.4	3.00	161.30	247.7	EOB @ 29.50° Inc. / 161.30° Azm
5173.9	29.50	161.30	4700.4	-1783.5	683.7	0.00	0.00	1882.9	Drop 3" / 100'
6157.4	0.00	0.00	5641.0	-2018.1	683.1	3.00	180.00	2130.6	EOD @ Vertical
8207.4	0.00	0.00	7691.0	-2018.1	683.1	0.00	0.00	2130.6	TD @ 8207.4' MD / 7691.0' TVD

**FORMATION TOP DETAILS**

TVDPath	MDPath	Formation
2591.0	2750.2	G' Sand
4441.0	4875.8	Williams Fork
5841.0	6157.4	TOG
6741.0	7257.4	Cameo
7401.0	7917.4	Base Cameo Coal
7441.0	7957.4	Rollins



Plan: Design #1 (Bruton 30-19E/Wellbore #1)

Created By: Will Jircik Date: 12:20, July 17 2017



# **Laramie Energy, LLC**

**Mesa County, CO**

**Bruton 30-10 Pad**

**Bruton 30-19E**

**Wellbore #1**

**Plan: Design #1**

## **QES Well Planning Report**

**17 July, 2017**





# Well Planning Report



<b>Database:</b>	EDM5002	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-19E
<b>Company:</b>	Laramie Energy, LLC	<b>TVD Reference:</b>	well @ 7665.0usft (H&P #290)
<b>Project:</b>	Mesa County, CO	<b>MD Reference:</b>	well @ 7665.0usft (H&P #290)
<b>Site:</b>	Bruton 30-10 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Bruton 30-19E	<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 30-10 Pad			
Site Position:		Northing:	1,523,424.58 usft	Latitude:	39.247725
From:	Map	Easting:	2,346,291.81 usft	Longitude:	-107.808574
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.46 °

Well	Bruton 30-19E					
Well Position	+N/-S	135.6 usft	Northing:	1,523,561.98 usft	Latitude:	39.248097
	+E/-W	-74.3 usft	Easting:	2,346,221.00 usft	Longitude:	-107.808836
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	7,643.0 usft	

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	7/14/2017	9.58	65.42	51,398

Design	Design #1				
Audit Notes:					
Version:	Phase:	PLAN		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.0	0.0	0.0	161.30	

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	
870.0	0.00	0.00	870.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,853.5	29.50	161.30	1,810.6	-234.6	79.4	3.00	3.00	0.00	161.30	
5,173.9	29.50	161.30	4,700.4	-1,783.5	603.7	0.00	0.00	0.00	0.00	
6,157.4	0.00	0.00	5,641.0	-2,018.1	683.1	3.00	-3.00	0.00	180.00	
8,207.4	0.00	0.00	7,691.0	-2,018.1	683.1	0.00	0.00	0.00	0.00	PBHL - Bruton 30-19E



## Well Planning Report



<b>Database:</b>	EDM5002	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-19E
<b>Company:</b>	Laramie Energy, LLC	<b>TVD Reference:</b>	well @ 7665.0usft (H&P #290)
<b>Project:</b>	Mesa County, CO	<b>MD Reference:</b>	well @ 7665.0usft (H&P #290)
<b>Site:</b>	Bruton 30-10 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Bruton 30-19E	<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
500.0	0.00	0.00	500.0	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
700.0	0.00	0.00	700.0	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
<b>KOP (Build 3° / 100')</b>									
870.0	0.00	0.00	870.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.90	161.30	900.0	-0.2	0.1	0.2	3.00	3.00	0.00
1,000.0	3.90	161.30	999.9	-4.2	1.4	4.4	3.00	3.00	0.00
1,100.0	6.90	161.30	1,099.4	-13.1	4.4	13.8	3.00	3.00	0.00
1,200.0	9.90	161.30	1,198.4	-26.9	9.1	28.4	3.00	3.00	0.00
1,300.0	12.90	161.30	1,296.4	-45.7	15.5	48.2	3.00	3.00	0.00
1,400.0	15.90	161.30	1,393.2	-69.2	23.4	73.1	3.00	3.00	0.00
1,500.0	18.90	161.30	1,488.6	-97.5	33.0	103.0	3.00	3.00	0.00
<b>8 5/8"</b>									
1,522.0	19.56	161.30	1,509.4	-104.4	35.3	110.2	3.00	3.00	0.00
1,600.0	21.90	161.30	1,582.4	-130.5	44.2	137.8	3.00	3.00	0.00
1,700.0	24.90	161.30	1,674.1	-168.2	56.9	177.5	3.00	3.00	0.00
1,800.0	27.90	161.30	1,763.7	-210.3	71.2	222.0	3.00	3.00	0.00
<b>EOB @ 29.50° Inc. / 161.30° Azm</b>									
1,853.5	29.50	161.30	1,810.6	-234.6	79.4	247.7	3.00	3.00	0.00
1,900.0	29.50	161.30	1,851.1	-256.3	86.8	270.6	0.00	0.00	0.00
2,000.0	29.50	161.30	1,938.1	-302.9	102.5	319.8	0.00	0.00	0.00
2,100.0	29.50	161.30	2,025.1	-349.6	118.3	369.1	0.00	0.00	0.00
2,200.0	29.50	161.30	2,112.2	-396.2	134.1	418.3	0.00	0.00	0.00
2,300.0	29.50	161.30	2,199.2	-442.9	149.9	467.6	0.00	0.00	0.00
2,400.0	29.50	161.30	2,286.2	-489.5	165.7	516.8	0.00	0.00	0.00
2,500.0	29.50	161.30	2,373.3	-536.2	181.5	566.1	0.00	0.00	0.00
2,600.0	29.50	161.30	2,460.3	-582.8	197.3	615.3	0.00	0.00	0.00
2,700.0	29.50	161.30	2,547.3	-629.5	213.1	664.6	0.00	0.00	0.00
<b>G<sup>+</sup> Sand</b>									
2,750.2	29.50	161.30	2,591.0	-652.9	221.0	689.3	0.00	0.00	0.00
2,800.0	29.50	161.30	2,634.4	-676.1	228.9	713.8	0.00	0.00	0.00
2,900.0	29.50	161.30	2,721.4	-722.8	244.7	763.1	0.00	0.00	0.00
3,000.0	29.50	161.30	2,808.4	-769.4	260.4	812.3	0.00	0.00	0.00
3,100.0	29.50	161.30	2,895.5	-816.1	276.2	861.6	0.00	0.00	0.00
3,200.0	29.50	161.30	2,982.5	-862.7	292.0	910.8	0.00	0.00	0.00
3,300.0	29.50	161.30	3,069.5	-909.4	307.8	960.1	0.00	0.00	0.00
3,400.0	29.50	161.30	3,156.6	-956.0	323.6	1,009.3	0.00	0.00	0.00
3,500.0	29.50	161.30	3,243.6	-1,002.7	339.4	1,058.6	0.00	0.00	0.00
3,600.0	29.50	161.30	3,330.6	-1,049.3	355.2	1,107.8	0.00	0.00	0.00
3,700.0	29.50	161.30	3,417.7	-1,096.0	371.0	1,157.1	0.00	0.00	0.00
3,800.0	29.50	161.30	3,504.7	-1,142.6	386.8	1,206.3	0.00	0.00	0.00
3,900.0	29.50	161.30	3,591.7	-1,189.3	402.6	1,255.5	0.00	0.00	0.00
4,000.0	29.50	161.30	3,678.8	-1,235.9	418.3	1,304.8	0.00	0.00	0.00
4,100.0	29.50	161.30	3,765.8	-1,282.6	434.1	1,354.0	0.00	0.00	0.00
4,200.0	29.50	161.30	3,852.8	-1,329.2	449.9	1,403.3	0.00	0.00	0.00
4,300.0	29.50	161.30	3,939.8	-1,375.9	465.7	1,452.5	0.00	0.00	0.00
4,400.0	29.50	161.30	4,026.9	-1,422.5	481.5	1,501.8	0.00	0.00	0.00
4,500.0	29.50	161.30	4,113.9	-1,469.2	497.3	1,551.0	0.00	0.00	0.00





## Well Planning Report



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<b>Company:</b>	Laramie Energy, LLC	<b>TVD Reference:</b>	well @ 7665.0usft (H&P #290)
<b>Project:</b>	Mesa County, CO	<b>MD Reference:</b>	well @ 7665.0usft (H&P #290)
<b>Site:</b>	Bruton 30-10 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Bruton 30-19E	<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)
4,600.0	29.50	161.30	4,200.9	-1,515.8	513.1	1,600.3	0.00	0.00	0.00
4,700.0	29.50	161.30	4,288.0	-1,562.4	528.9	1,649.5	0.00	0.00	0.00
4,800.0	29.50	161.30	4,375.0	-1,609.1	544.7	1,698.8	0.00	0.00	0.00
<b>Williams Fork</b>									
4,875.8	29.50	161.30	4,441.0	-1,644.5	556.6	1,736.1	0.00	0.00	0.00
4,900.0	29.50	161.30	4,462.0	-1,655.7	560.5	1,748.0	0.00	0.00	0.00
5,000.0	29.50	161.30	4,549.1	-1,702.4	576.3	1,797.3	0.00	0.00	0.00
5,100.0	29.50	161.30	4,636.1	-1,749.0	592.0	1,846.5	0.00	0.00	0.00
<b>Drop 3° / 100'</b>									
5,173.9	29.50	161.30	4,700.4	-1,783.5	603.7	1,882.9	0.00	0.00	0.00
5,200.0	28.72	161.30	4,723.2	-1,795.5	607.8	1,895.6	3.00	-3.00	0.00
5,300.0	25.72	161.30	4,812.1	-1,838.9	622.4	1,941.4	3.00	-3.00	0.00
5,400.0	22.72	161.30	4,903.3	-1,877.7	635.6	1,982.4	3.00	-3.00	0.00
5,500.0	19.72	161.30	4,996.5	-1,912.0	647.2	2,018.6	3.00	-3.00	0.00
5,600.0	16.72	161.30	5,091.5	-1,941.6	657.2	2,049.8	3.00	-3.00	0.00
5,700.0	13.72	161.30	5,188.0	-1,966.5	665.6	2,076.1	3.00	-3.00	0.00
5,800.0	10.72	161.30	5,285.7	-1,986.5	672.4	2,097.2	3.00	-3.00	0.00
5,900.0	7.72	161.30	5,384.4	-2,001.7	677.6	2,113.3	3.00	-3.00	0.00
6,000.0	4.72	161.30	5,483.8	-2,012.0	681.0	2,124.1	3.00	-3.00	0.00
6,100.0	1.72	161.30	5,583.6	-2,017.3	682.8	2,129.7	3.00	-3.00	0.00
<b>EOD @ Vertical - TOG</b>									
6,157.4	0.00	0.00	5,641.0	-2,018.1	683.1	2,130.6	3.00	-3.00	-281.18
6,200.0	0.00	0.00	5,683.6	-2,018.1	683.1	2,130.6	0.00	0.00	0.00
6,300.0	0.00	0.00	5,783.6	-2,018.1	683.1	2,130.6	0.00	0.00	0.00
6,400.0	0.00	0.00	5,883.6	-2,018.1	683.1	2,130.6	0.00	0.00	0.00
6,500.0	0.00	0.00	5,983.6	-2,018.1	683.1	2,130.6	0.00	0.00	0.00
6,600.0	0.00	0.00	6,083.6	-2,018.1	683.1	2,130.6	0.00	0.00	0.00
6,700.0	0.00	0.00	6,183.6	-2,018.1	683.1	2,130.6	0.00	0.00	0.00
6,800.0	0.00	0.00	6,283.6	-2,018.1	683.1	2,130.6	0.00	0.00	0.00
6,900.0	0.00	0.00	6,383.6	-2,018.1	683.1	2,130.6	0.00	0.00	0.00
7,000.0	0.00	0.00	6,483.6	-2,018.1	683.1	2,130.6	0.00	0.00	0.00
7,100.0	0.00	0.00	6,583.6	-2,018.1	683.1	2,130.6	0.00	0.00	0.00
7,200.0	0.00	0.00	6,683.6	-2,018.1	683.1	2,130.6	0.00	0.00	0.00
<b>Cameo</b>									
7,257.4	0.00	0.00	6,741.0	-2,018.1	683.1	2,130.6	0.00	0.00	0.00
7,300.0	0.00	0.00	6,783.6	-2,018.1	683.1	2,130.6	0.00	0.00	0.00
7,400.0	0.00	0.00	6,883.6	-2,018.1	683.1	2,130.6	0.00	0.00	0.00
7,500.0	0.00	0.00	6,983.6	-2,018.1	683.1	2,130.6	0.00	0.00	0.00
7,600.0	0.00	0.00	7,083.6	-2,018.1	683.1	2,130.6	0.00	0.00	0.00
7,700.0	0.00	0.00	7,183.6	-2,018.1	683.1	2,130.6	0.00	0.00	0.00
7,800.0	0.00	0.00	7,283.6	-2,018.1	683.1	2,130.6	0.00	0.00	0.00
7,900.0	0.00	0.00	7,383.6	-2,018.1	683.1	2,130.6	0.00	0.00	0.00
<b>Base Cameo Coal</b>									
7,917.4	0.00	0.00	7,401.0	-2,018.1	683.1	2,130.6	0.00	0.00	0.00
<b>Rollins</b>									
7,957.4	0.00	0.00	7,441.0	-2,018.1	683.1	2,130.6	0.00	0.00	0.00
8,000.0	0.00	0.00	7,483.6	-2,018.1	683.1	2,130.6	0.00	0.00	0.00
8,100.0	0.00	0.00	7,583.6	-2,018.1	683.1	2,130.6	0.00	0.00	0.00
8,200.0	0.00	0.00	7,683.6	-2,018.1	683.1	2,130.6	0.00	0.00	0.00
<b>TD @ 8207.4' MD / 7691.0' TVD</b>									
8,207.4	0.00	0.00	7,691.0	-2,018.1	683.1	2,130.6	0.00	0.00	0.00



## Well Planning Report



<b>Database:</b>	EDM5002	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-19E
<b>Company:</b>	Laramie Energy, LLC	<b>TVD Reference:</b>	well @ 7665.0usft (H&P #290)
<b>Project:</b>	Mesa County, CO	<b>MD Reference:</b>	well @ 7665.0usft (H&P #290)
<b>Site:</b>	Bruton 30-10 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Bruton 30-19E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

## Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL - Bruton 30-19E	0.00	0.00	7,691.0	-2,018.1	683.1	1,521,527.17	2,346,852.62	39.242556	-107.806424
- plan hits target center									
- Circle (radius 50.0)									

## Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,522.0	1,509.4	8 5/8"	8-5/8	11

## Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,750.2	2,591.0	G' Sand			
4,875.8	4,441.0	Williams Fork			
6,157.4	5,841.0	TOG			
7,257.4	6,741.0	Cameo			
7,917.4	7,401.0	Base Cameo Coal			
7,957.4	7,441.0	Rollins			

## Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
870.0	870.0	0.0	0.0	KOP (Build 3" / 100')
1,853.5	1,810.8	-234.6	79.4	EOB @ 29.50° Inc. / 161.30° Azm
5,173.9	4,700.4	-1,783.5	603.7	Drop 3" / 100'
6,157.4	5,841.0	-2,018.1	683.1	EOD @ Vertical
8,207.4	7,691.0	-2,018.1	683.1	TD @ 8207.4' MD / 7691.0' TVD