



Project: Mesa County, CO  
 Site: Bruton 30-10 Pad  
 Well: Bruton 30-14E  
 Wellbore: Wellbore #1  
 Design: Design #1  
 Latitude: 39.248192  
 Longitude: -107.808908  
 Ground Level: 7643.0  
 well @ 7665.0usft (22' KB)



#### 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 (NE) Reference: Well Bruton 30-14E, True North  
 Vertical (TVD) Reference: well @ 7665.0usft (22' KB)  
 Section (VS) Reference: Slot - (0.0N, 0.0E)  
 Measured Depth Reference: well @ 7665.0usft (22' KB)  
 Calculation Method: Minimum Curvature

#### WELL DETAILS: Bruton 30-14E

Ground Level: 7643.0  
 +N/-S +E/-W Northing Easting Latitude Longitude  
 0.0 0.0 1523597.08 2346201.50 39.248192 -107.808908

#### DESIGN TARGET DETAILS

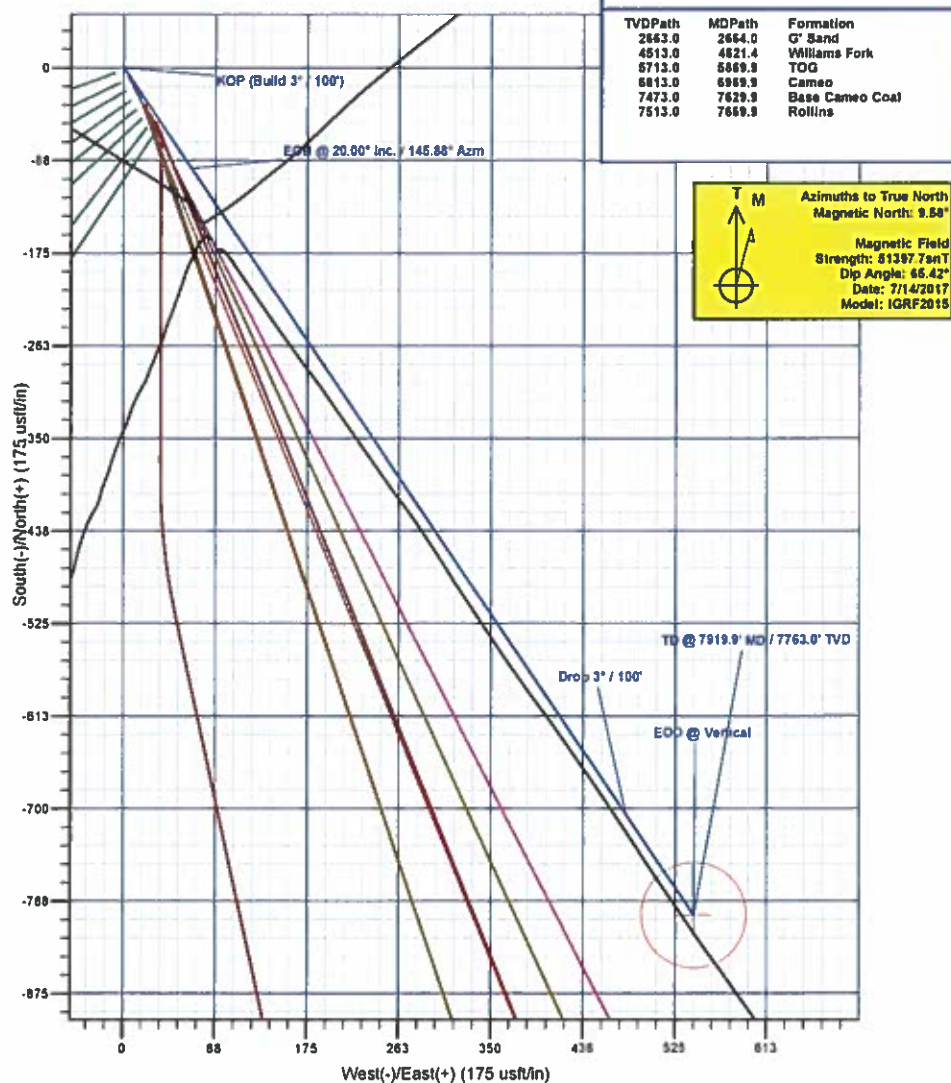
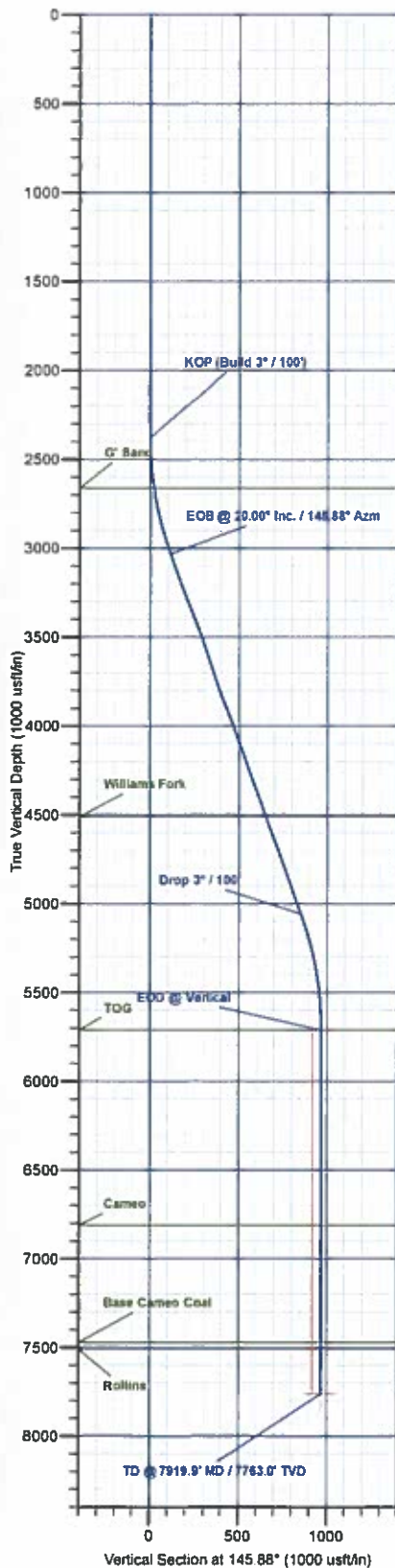
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL - Bruton 30-14E	7763.0	-801.3	542.9	1522782.28	2346723.86	39.248992	-107.806991

#### 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	
2360.0	0.00	0.00	2360.0	0.0	0.0	0.00	0.00	0.0	KOP (Build 3° / 100')
3046.6	20.00	145.88	3033.1	-95.3	64.6	3.00	145.88	115.1	EOB @ 20.00° Inc. / 145.88° Azm
5203.4	20.00	145.88	5059.9	-705.9	478.3	0.00	0.00	852.7	Drop 3° / 100'
5869.9	0.00	0.00	5713.0	-801.3	542.9	3.00	180.00	967.9	EOD @ Vertical
7919.9	0.00	0.00	7763.0	-801.3	542.9	0.00	0.00	967.9	TD @ 7919.9' MD / 7763.0' TVD

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
2663.0	2664.0	G' Sand
4513.0	4621.4	Williams Fork
5713.0	5869.9	TOG
5813.0	5969.9	Cameo
7473.0	7629.9	Base Cameo Coal
7513.0	7669.9	Rollins



Plan: Design #1 (Bruton 30-14E/Wellbore #1)

Created By: Will Jircik Date: 8:19, July 17 2017



# **Laramie Energy, LLC**

**Mesa County, CO**

**Bruton 30-10 Pad**

**Bruton 30-14E**

**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 30-14E
<b>Company:</b>	Laramie Energy, LLC	<b>TVD Reference:</b>	well @ 7665.0usft (22' KB)
<b>Project:</b>	Mesa County, CO	<b>MD Reference:</b>	well @ 7665.0usft (22' KB)
<b>Site:</b>	Bruton 30-10 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Bruton 30-14E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

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

<b>Site</b>	Bruton 30-10 Pad			
<b>Site Position:</b>		<b>Northing:</b>	1,523,424.58 usft	<b>Latitude:</b> 39.247725
<b>From:</b>	Map	<b>Easting:</b>	2,346,291.81 usft	<b>Longitude:</b> -107.808574
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b> -1.46 °

<b>Well</b>	Bruton 30-14E			
<b>Well Position</b>	<b>+N/-S</b>	170.2 usft	<b>Northing:</b>	1,523,597.09 usft
	<b>+E/-W</b>	-94.7 usft	<b>Easting:</b>	2,346,201.50 usft
<b>Position Uncertainty</b>	0.0 usft	<b>Wellhead Elevation:</b>	0.0 usft	<b>Ground Level:</b> 7,643.0 usft

<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>
	IGRF2015	7/14/2017	9.58	65.42	51,398

<b>Design</b>	Design #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	145.88

<b>Plan Sections</b>										
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	
2,380.0	0.00	0.00	2,380.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,046.6	20.00	145.88	3,033.1	-95.3	64.6	3.00	3.00	0.00	145.88	
5,203.4	20.00	145.88	5,059.9	-705.9	478.3	0.00	0.00	0.00	0.00	
5,869.9	0.00	0.00	5,713.0	-801.3	542.9	3.00	-3.00	0.00	180.00	
7,919.9	0.00	0.00	7,763.0	-801.3	542.9	0.00	0.00	0.00	0.00	PBHL - Bruton 30-14E



# Well Planning Report



<b>Database:</b>	EDM5002	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-14E
<b>Company:</b>	Laramie Energy, LLC	<b>TVD Reference:</b>	well @ 7665 0usft (22' KB)
<b>Project:</b>	Mesa County, CO	<b>MD Reference:</b>	well @ 7665 0usft (22' KB)
<b>Site:</b>	Bruton 30-10 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Bruton 30-14E	<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
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>8 5/8"</b>									
1,522.0	0.00	0.00	1,522.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,380.0	0.00	0.00	2,380.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.60	145.88	2,400.0	-0.1	0.1	0.1	3.00	3.00	0.00
2,500.0	3.60	145.88	2,499.9	-3.1	2.1	3.8	3.00	3.00	0.00
2,600.0	6.60	145.88	2,599.5	-10.5	7.1	12.7	3.00	3.00	0.00
<b>G' Sand</b>									
2,664.0	8.52	145.88	2,663.0	-17.5	11.8	21.1	3.00	3.00	0.00
2,700.0	9.60	145.88	2,698.5	-22.1	15.0	26.7	3.00	3.00	0.00
2,800.0	12.60	145.88	2,796.6	-38.1	25.8	46.0	3.00	3.00	0.00
2,900.0	15.60	145.88	2,893.6	-58.2	39.5	70.4	3.00	3.00	0.00
3,000.0	18.60	145.88	2,989.2	-82.6	56.0	99.8	3.00	3.00	0.00
3,046.6	20.00	145.88	3,033.1	-95.3	64.6	115.1	3.00	3.00	0.00
3,100.0	20.00	145.88	3,083.3	-110.5	74.8	133.4	0.00	0.00	0.00
3,200.0	20.00	145.88	3,177.3	-138.8	94.0	167.6	0.00	0.00	0.00
3,300.0	20.00	145.88	3,271.3	-167.1	113.2	201.8	0.00	0.00	0.00
3,400.0	20.00	145.88	3,365.2	-195.4	132.4	236.0	0.00	0.00	0.00
3,500.0	20.00	145.88	3,459.2	-223.7	151.6	270.2	0.00	0.00	0.00
3,600.0	20.00	145.88	3,553.2	-252.0	170.7	304.4	0.00	0.00	0.00
3,700.0	20.00	145.88	3,647.2	-280.3	189.9	338.6	0.00	0.00	0.00
3,800.0	20.00	145.88	3,741.1	-308.6	209.1	372.8	0.00	0.00	0.00
3,900.0	20.00	145.88	3,835.1	-336.9	228.3	407.0	0.00	0.00	0.00
4,000.0	20.00	145.88	3,929.1	-365.3	247.5	441.2	0.00	0.00	0.00
4,100.0	20.00	145.88	4,023.0	-393.6	266.7	475.4	0.00	0.00	0.00
4,200.0	20.00	145.88	4,117.0	-421.9	285.8	509.6	0.00	0.00	0.00
4,300.0	20.00	145.88	4,211.0	-450.2	305.0	543.8	0.00	0.00	0.00
4,400.0	20.00	145.88	4,304.9	-478.5	324.2	578.0	0.00	0.00	0.00
4,500.0	20.00	145.88	4,398.9	-506.8	343.4	612.2	0.00	0.00	0.00
4,600.0	20.00	145.88	4,492.9	-535.1	362.6	646.4	0.00	0.00	0.00



# Well Planning Report



<b>Database:</b>	EDM5002	<b>Local Co-ordinate Reference:</b>	Well Bruton 30-14E
<b>Company:</b>	Laramie Energy, LLC	<b>TVD Reference:</b>	well @ 7665.0usft (22' KB)
<b>Project:</b>	Mesa County, CO	<b>MD Reference:</b>	well @ 7665.0usft (22' KB)
<b>Site:</b>	Bruton 30-10 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Bruton 30-14E	<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)
<b>Williams Fork</b>									
4,621.4	20.00	145.88	4,513.0	-541.2	366.7	653.7	0.00	0.00	0.00
4,700.0	20.00	145.88	4,586.9	-563.4	381.8	680.6	0.00	0.00	0.00
4,800.0	20.00	145.88	4,680.8	-591.7	400.9	714.8	0.00	0.00	0.00
4,900.0	20.00	145.88	4,774.8	-620.1	420.1	749.0	0.00	0.00	0.00
5,000.0	20.00	145.88	4,868.8	-648.4	439.3	783.2	0.00	0.00	0.00
5,100.0	20.00	145.88	4,962.7	-676.7	458.5	817.4	0.00	0.00	0.00
5,200.0	20.00	145.88	5,056.7	-705.0	477.7	851.6	0.00	0.00	0.00
5,203.4	20.00	145.88	5,059.9	-705.9	478.3	852.7	0.00	0.00	0.00
5,300.0	17.10	145.88	5,151.5	-731.4	495.6	883.5	3.00	-3.00	0.00
5,400.0	14.10	145.88	5,247.8	-753.6	510.6	910.3	3.00	-3.00	0.00
5,500.0	11.10	145.88	5,345.4	-771.7	522.9	932.1	3.00	-3.00	0.00
5,600.0	8.10	145.88	5,444.0	-785.5	532.2	948.8	3.00	-3.00	0.00
5,700.0	5.10	145.88	5,543.3	-795.0	538.7	960.3	3.00	-3.00	0.00
5,800.0	2.10	145.88	5,643.1	-800.2	542.2	966.6	3.00	-3.00	0.00
<b>TOG</b>									
5,869.9	0.00	0.00	5,713.0	-801.3	542.9	967.9	3.00	-3.00	0.00
5,900.0	0.00	0.00	5,743.1	-801.3	542.9	967.9	0.00	0.00	0.00
6,000.0	0.00	0.00	5,843.1	-801.3	542.9	967.9	0.00	0.00	0.00
6,100.0	0.00	0.00	5,943.1	-801.3	542.9	967.9	0.00	0.00	0.00
6,200.0	0.00	0.00	6,043.1	-801.3	542.9	967.9	0.00	0.00	0.00
6,300.0	0.00	0.00	6,143.1	-801.3	542.9	967.9	0.00	0.00	0.00
6,400.0	0.00	0.00	6,243.1	-801.3	542.9	967.9	0.00	0.00	0.00
6,500.0	0.00	0.00	6,343.1	-801.3	542.9	967.9	0.00	0.00	0.00
6,600.0	0.00	0.00	6,443.1	-801.3	542.9	967.9	0.00	0.00	0.00
6,700.0	0.00	0.00	6,543.1	-801.3	542.9	967.9	0.00	0.00	0.00
6,800.0	0.00	0.00	6,643.1	-801.3	542.9	967.9	0.00	0.00	0.00
6,900.0	0.00	0.00	6,743.1	-801.3	542.9	967.9	0.00	0.00	0.00
<b>Cameo</b>									
6,969.9	0.00	0.00	6,813.0	-801.3	542.9	967.9	0.00	0.00	0.00
7,000.0	0.00	0.00	6,843.1	-801.3	542.9	967.9	0.00	0.00	0.00
7,100.0	0.00	0.00	6,943.1	-801.3	542.9	967.9	0.00	0.00	0.00
7,200.0	0.00	0.00	7,043.1	-801.3	542.9	967.9	0.00	0.00	0.00
7,300.0	0.00	0.00	7,143.1	-801.3	542.9	967.9	0.00	0.00	0.00
7,400.0	0.00	0.00	7,243.1	-801.3	542.9	967.9	0.00	0.00	0.00
7,500.0	0.00	0.00	7,343.1	-801.3	542.9	967.9	0.00	0.00	0.00
7,600.0	0.00	0.00	7,443.1	-801.3	542.9	967.9	0.00	0.00	0.00
<b>Base Cameo Coal</b>									
7,629.9	0.00	0.00	7,473.0	-801.3	542.9	967.9	0.00	0.00	0.00
<b>Rollins</b>									
7,669.9	0.00	0.00	7,513.0	-801.3	542.9	967.9	0.00	0.00	0.00
7,700.0	0.00	0.00	7,543.1	-801.3	542.9	967.9	0.00	0.00	0.00
7,800.0	0.00	0.00	7,643.1	-801.3	542.9	967.9	0.00	0.00	0.00
7,900.0	0.00	0.00	7,743.1	-801.3	542.9	967.9	0.00	0.00	0.00
7,919.9	0.00	0.00	7,763.0	-801.3	542.9	967.9	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 (22' KB)
<b>Project:</b>	Mesa County, CO	<b>MD Reference:</b>	well @ 7665.0usft (22' KB)
<b>Site:</b>	Bruton 30-10 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Bruton 30-14E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

## Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL - Bruton 30-14E - plan hits target center - Circle (radius 50.0)	0.00	0.00	7,763.0	-801.3	542.9	1,522,782.29	2,346,723.86	39.245992	-107.806991

## Casing Points

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

## Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,664.0	2,663.0	G' Sand			
4,621.4	4,513.0	Williams Fork			
5,869.9	5,713.0	TOG			
6,969.9	6,813.0	Cameo			
7,629.9	7,473.0	Base Cameo Coal			
7,669.9	7,513.0	Rollins			