



Project: Mesa County, CO
 Site: Bruton 30-01 Pad
 Well: Bruton 19-14E
 Wellbore: Wellbore #1
 Design: Design #1
 Latitude: 39.255283
 Longitude: -107.806253
 Ground Level: 7425.0
 well @ 7455.0usft (H&P #522)



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 19-14E, True North
 Vertical (TVD) Reference: well @ 7455.0usft (H&P #522)
 Section (VS) Reference: Shot - (0.0N, 0.0E)
 Measured Depth Reference: well @ 7455.0usft (H&P #522)
 Calculation Method: Minimum Curvature

WELL DETAILS: Bruton 19-14E

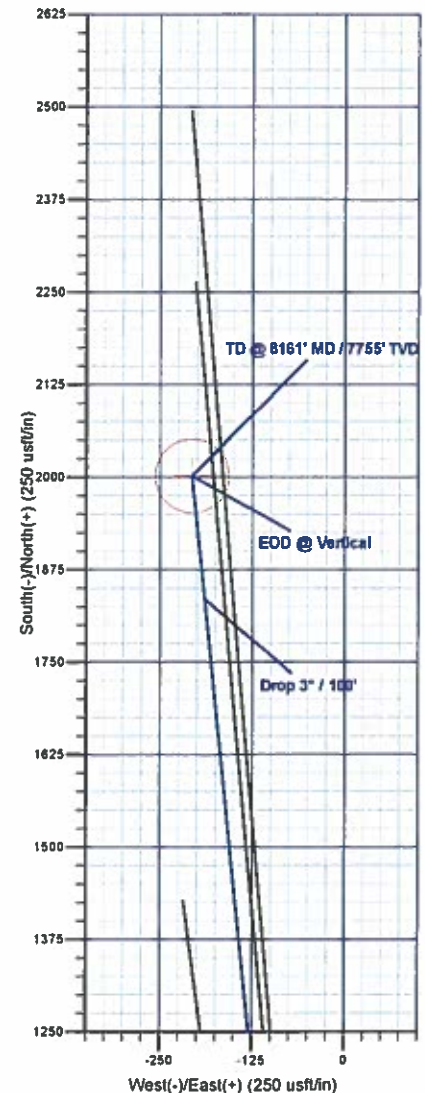
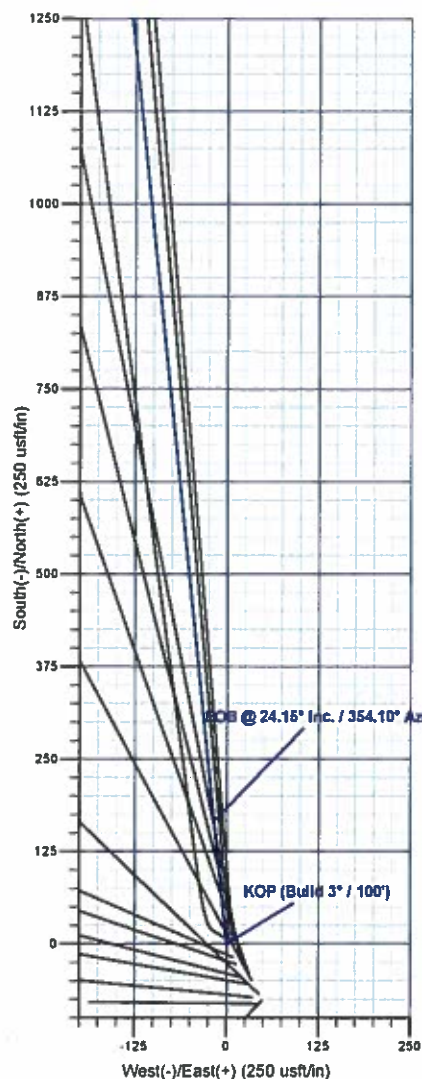
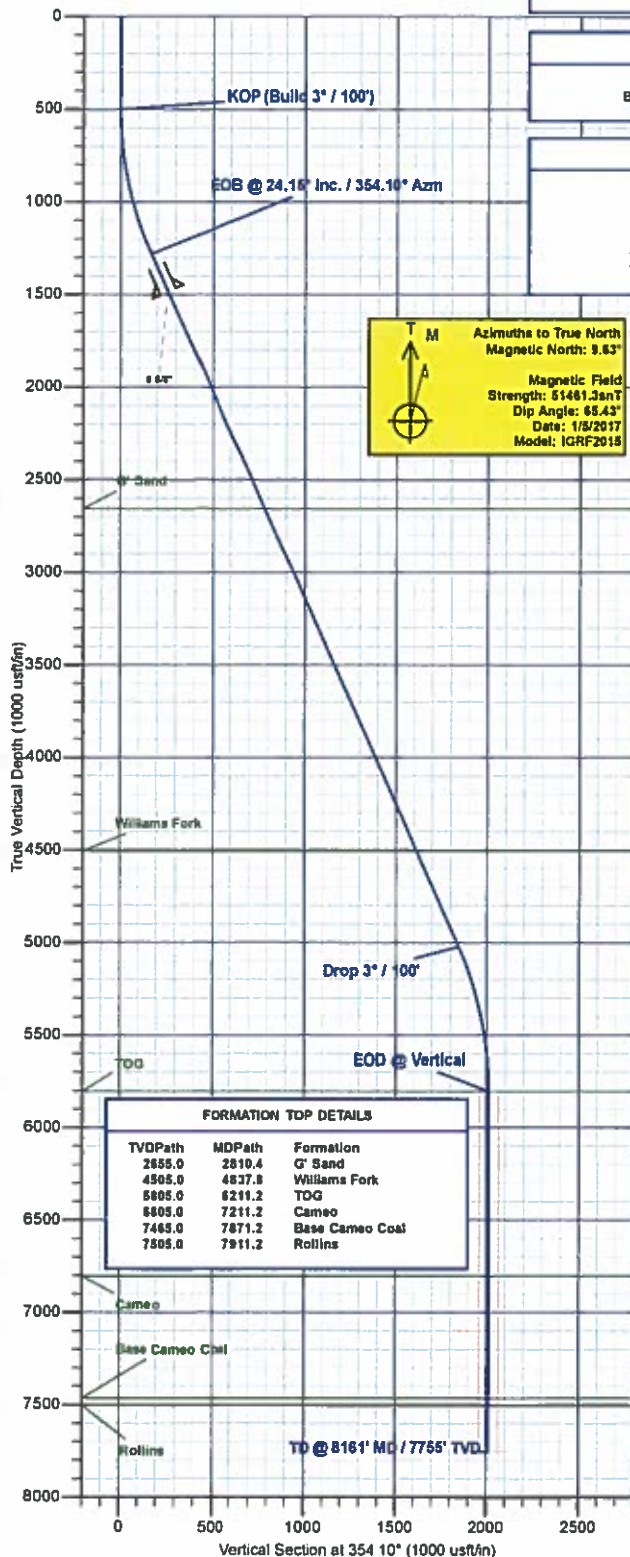
+N/-S	+E/-W	Northing	Ground Level: Easting	Latitude	Longitude
0.0	0.0	1526159.94	2347018.76	39.255283	-107.806253

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BRUTON 19-14E	7755.0	2001.6	-206.8	1528166.17	2346862.87	39.260779	-107.806983

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dieg	TFace	VSEct	Annotation
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	KOP (Build 3° / 100')
500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.0	EOB @ 24.15° Inc. / 354.10° Azm
1305.0	24.15	354.10	1261.4	188.3	-17.2	3.00	354.10	187.2	Drop 3° / 100'
5406.2	24.15	354.10	5023.8	1835.3	-189.6	0.00	0.00	1845.1	EOD @ Vertical
6211.2	0.00	0.00	5805.0	2001.6	-206.8	3.00	180.00	2012.3	TD @ 8161' MD / 7755' TVD
8161.2	0.00	0.00	7755.0	2001.6	-206.8	0.00	0.00	2012.3	



Plan: Design #1 (Bruton 19-14E/Wellbore #1)

Created By: Will Jircik Date: 14:40, January 09 2017



Laramie Energy, LLC

Mesa County, CO

Bruton 30-01 Pad

Bruton 19-14E

Wellbore #1

Plan: Design #1

QES Well Planning Report

09 January, 2017





Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 19-14E
Company:	Laramie Energy, LLC	TVD Reference:	well @ 7455.0usft (H&P #522)
Project:	Mesa County, CO	MD Reference:	well @ 7455.0usft (H&P #522)
Site:	Bruton 30-01 Pad	North Reference:	True
Well:	Bruton 19-14E	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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 30-01 Pad			
Site Position:		Northing:	1,526,078.02 usft	Latitude: 39.255061
From:	Lat/Long	Easting:	2,347,056.81 usft	Longitude: -107.806111
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence: -1.45 "

Well	Bruton 19-14E					
Well Position	+N/-S	80.9 usft	Northing:	1,526,159.94 usft	Latitude:	39.255283
	+E/-W	-40.1 usft	Easting:	2,347,018.78 usft	Longitude:	-107.806253
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	7,425.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	1/5/2017	9.63	65.43	51,461

Design	Design #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	354.10

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	
1,305.0	24.15	354.10	1,281.4	166.3	-17.2	3.00	3.00	0.00	354.10	
5,406.2	24.15	354.10	5,023.6	1,835.3	-189.6	0.00	0.00	0.00	0.00	
6,211.2	0.00	0.00	5,805.0	2,001.6	-206.8	3.00	-3.00	0.00	180.00	
8,161.2	0.00	0.00	7,755.0	2,001.6	-206.8	0.00	0.00	0.00	0.00	BRUTON 19-14E



Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 19-14E
Company:	Laramie Energy, LLC	TVD Reference:	well @ 7455.0usft (H&P #522)
Project:	Mesa County, CO	MD Reference:	well @ 7455.0usft (H&P #522)
Site:	Bruton 30-01 Pad	North Reference:	True
Well:	Bruton 19-14E	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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	354.10	600.0	2.6	-0.3	2.6	3.00	3.00	0.00
700.0	6.00	354.10	699.6	10.4	-1.1	10.5	3.00	3.00	0.00
800.0	9.00	354.10	798.8	23.4	-2.4	23.5	3.00	3.00	0.00
900.0	12.00	354.10	897.1	41.5	-4.3	41.7	3.00	3.00	0.00
1,000.0	15.00	354.10	994.3	64.7	-6.7	65.1	3.00	3.00	0.00
1,100.0	18.00	354.10	1,090.2	93.0	-9.6	93.5	3.00	3.00	0.00
1,200.0	21.00	354.10	1,184.4	126.2	-13.0	126.9	3.00	3.00	0.00
1,300.0	24.00	354.10	1,276.8	164.2	-17.0	165.1	3.00	3.00	0.00
EOB @ 24.15° Inc. / 354.10° Azm									
1,305.0	24.15	354.10	1,281.4	166.3	-17.2	167.2	3.00	3.00	0.00
1,400.0	24.15	354.10	1,368.1	204.9	-21.2	206.0	0.00	0.00	0.00
1,500.0	24.15	354.10	1,459.3	245.6	-25.4	246.9	0.00	0.00	0.00
8 5/8"									
1,530.0	24.15	354.10	1,486.7	257.8	-26.6	259.2	0.00	0.00	0.00
1,600.0	24.15	354.10	1,550.6	286.3	-29.6	287.9	0.00	0.00	0.00
1,700.0	24.15	354.10	1,641.8	327.0	-33.8	328.8	0.00	0.00	0.00
1,800.0	24.15	354.10	1,733.0	367.7	-38.0	369.7	0.00	0.00	0.00
1,900.0	24.15	354.10	1,824.3	408.4	-42.2	410.6	0.00	0.00	0.00
2,000.0	24.15	354.10	1,915.5	449.1	-46.4	451.5	0.00	0.00	0.00
2,100.0	24.15	354.10	2,006.8	489.8	-50.6	492.4	0.00	0.00	0.00
2,200.0	24.15	354.10	2,098.0	530.5	-54.8	533.3	0.00	0.00	0.00
2,300.0	24.15	354.10	2,189.3	571.2	-59.0	574.2	0.00	0.00	0.00
2,400.0	24.15	354.10	2,280.5	611.9	-63.2	615.2	0.00	0.00	0.00
2,500.0	24.15	354.10	2,371.8	652.6	-67.4	656.1	0.00	0.00	0.00
2,600.0	24.15	354.10	2,463.0	693.3	-71.6	697.0	0.00	0.00	0.00
2,700.0	24.15	354.10	2,554.3	734.0	-75.8	737.9	0.00	0.00	0.00
2,800.0	24.15	354.10	2,645.5	774.7	-80.0	778.8	0.00	0.00	0.00
G' Sand									
2,810.4	24.15	354.10	2,655.0	778.9	-80.5	783.1	0.00	0.00	0.00
2,900.0	24.15	354.10	2,736.8	815.4	-84.2	819.7	0.00	0.00	0.00
3,000.0	24.15	354.10	2,828.0	856.1	-88.4	860.6	0.00	0.00	0.00
3,100.0	24.15	354.10	2,919.3	896.8	-92.6	901.6	0.00	0.00	0.00
3,200.0	24.15	354.10	3,010.5	937.5	-96.8	942.5	0.00	0.00	0.00
3,300.0	24.15	354.10	3,101.8	978.2	-101.0	983.4	0.00	0.00	0.00
3,400.0	24.15	354.10	3,193.0	1,018.9	-105.2	1,024.3	0.00	0.00	0.00
3,500.0	24.15	354.10	3,284.3	1,059.6	-109.4	1,065.2	0.00	0.00	0.00
3,600.0	24.15	354.10	3,375.5	1,100.3	-113.7	1,106.1	0.00	0.00	0.00
3,700.0	24.15	354.10	3,466.7	1,141.0	-117.9	1,147.0	0.00	0.00	0.00
3,800.0	24.15	354.10	3,558.0	1,181.7	-122.1	1,188.0	0.00	0.00	0.00
3,900.0	24.15	354.10	3,649.2	1,222.4	-126.3	1,228.9	0.00	0.00	0.00
4,000.0	24.15	354.10	3,740.5	1,263.1	-130.5	1,269.8	0.00	0.00	0.00
4,100.0	24.15	354.10	3,831.7	1,303.8	-134.7	1,310.7	0.00	0.00	0.00
4,200.0	24.15	354.10	3,923.0	1,344.5	-138.9	1,351.6	0.00	0.00	0.00
4,300.0	24.15	354.10	4,014.2	1,385.2	-143.1	1,392.5	0.00	0.00	0.00
4,400.0	24.15	354.10	4,105.5	1,425.9	-147.3	1,433.4	0.00	0.00	0.00
4,500.0	24.15	354.10	4,196.7	1,466.5	-151.5	1,474.4	0.00	0.00	0.00
4,600.0	24.15	354.10	4,288.0	1,507.2	-155.7	1,515.3	0.00	0.00	0.00



Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 19-14E
Company:	Laramie Energy, LLC	TVD Reference:	well @ 7455 0usft (H&P #522)
Project:	Mesa County, CO	MD Reference:	well @ 7455 0usft (H&P #522)
Site:	Bruton 30-01 Pad	North Reference:	True
Well:	Bruton 19-14E	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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)
4,700.0	24.15	354.10	4,379.2	1,547.9	-159.9	1,556.2	0.00	0.00	0.00
4,800.0	24.15	354.10	4,470.5	1,588.6	-164.1	1,597.1	0.00	0.00	0.00
Williams Fork									
4,837.8	24.15	354.10	4,505.0	1,604.0	-165.7	1,612.6	0.00	0.00	0.00
4,900.0	24.15	354.10	4,561.7	1,629.3	-168.3	1,638.0	0.00	0.00	0.00
5,000.0	24.15	354.10	4,653.0	1,670.0	-172.5	1,678.9	0.00	0.00	0.00
5,100.0	24.15	354.10	4,744.2	1,710.7	-176.7	1,719.8	0.00	0.00	0.00
5,200.0	24.15	354.10	4,835.5	1,751.4	-180.9	1,760.7	0.00	0.00	0.00
5,300.0	24.15	354.10	4,926.7	1,792.1	-185.1	1,801.7	0.00	0.00	0.00
5,400.0	24.15	354.10	5,017.9	1,832.8	-189.3	1,842.6	0.00	0.00	0.00
Drop 3° / 100'									
5,406.2	24.15	354.10	5,023.6	1,835.3	-189.6	1,845.1	0.00	0.00	0.00
5,500.0	21.34	354.10	5,110.1	1,871.4	-193.3	1,881.4	3.00	-3.00	0.00
5,600.0	18.34	354.10	5,204.2	1,905.2	-196.8	1,915.3	3.00	-3.00	0.00
5,700.0	15.34	354.10	5,299.9	1,934.0	-199.8	1,944.3	3.00	-3.00	0.00
5,800.0	12.34	354.10	5,396.9	1,957.8	-202.2	1,968.2	3.00	-3.00	0.00
5,900.0	9.34	354.10	5,495.2	1,976.5	-204.2	1,987.0	3.00	-3.00	0.00
6,000.0	6.34	354.10	5,594.2	1,990.0	-205.6	2,000.6	3.00	-3.00	0.00
6,100.0	3.34	354.10	5,693.8	1,998.4	-206.4	2,009.0	3.00	-3.00	0.00
6,200.0	0.34	354.10	5,793.8	2,001.6	-206.8	2,012.2	3.00	-3.00	0.00
EOD @ Vertical - TOG									
6,211.2	0.00	0.00	5,805.0	2,001.6	-206.8	2,012.3	3.00	-3.00	52.56
6,300.0	0.00	0.00	5,893.8	2,001.6	-206.8	2,012.3	0.00	0.00	0.00
6,400.0	0.00	0.00	5,993.8	2,001.6	-206.8	2,012.3	0.00	0.00	0.00
6,500.0	0.00	0.00	6,093.8	2,001.6	-206.8	2,012.3	0.00	0.00	0.00
6,600.0	0.00	0.00	6,193.8	2,001.6	-206.8	2,012.3	0.00	0.00	0.00
6,700.0	0.00	0.00	6,293.8	2,001.6	-206.8	2,012.3	0.00	0.00	0.00
6,800.0	0.00	0.00	6,393.8	2,001.6	-206.8	2,012.3	0.00	0.00	0.00
6,900.0	0.00	0.00	6,493.8	2,001.6	-206.8	2,012.3	0.00	0.00	0.00
7,000.0	0.00	0.00	6,593.8	2,001.6	-206.8	2,012.3	0.00	0.00	0.00
7,100.0	0.00	0.00	6,693.8	2,001.6	-206.8	2,012.3	0.00	0.00	0.00
7,200.0	0.00	0.00	6,793.8	2,001.6	-206.8	2,012.3	0.00	0.00	0.00
Cameo									
7,211.2	0.00	0.00	6,805.0	2,001.6	-206.8	2,012.3	0.00	0.00	0.00
7,300.0	0.00	0.00	6,893.8	2,001.6	-206.8	2,012.3	0.00	0.00	0.00
7,400.0	0.00	0.00	6,993.8	2,001.6	-206.8	2,012.3	0.00	0.00	0.00
7,500.0	0.00	0.00	7,093.8	2,001.6	-206.8	2,012.3	0.00	0.00	0.00
7,600.0	0.00	0.00	7,193.8	2,001.6	-206.8	2,012.3	0.00	0.00	0.00
7,700.0	0.00	0.00	7,293.8	2,001.6	-206.8	2,012.3	0.00	0.00	0.00
7,800.0	0.00	0.00	7,393.8	2,001.6	-206.8	2,012.3	0.00	0.00	0.00
Base Cameo Coal									
7,871.2	0.00	0.00	7,465.0	2,001.6	-206.8	2,012.3	0.00	0.00	0.00
7,900.0	0.00	0.00	7,493.8	2,001.6	-206.8	2,012.3	0.00	0.00	0.00
Rollins									
7,911.2	0.00	0.00	7,505.0	2,001.6	-206.8	2,012.3	0.00	0.00	0.00
8,000.0	0.00	0.00	7,593.8	2,001.6	-206.8	2,012.3	0.00	0.00	0.00
8,100.0	0.00	0.00	7,693.8	2,001.6	-206.8	2,012.3	0.00	0.00	0.00
TD @ 8161' MD / 7755' TVD									
8,161.2	0.00	0.00	7,755.0	2,001.6	-206.8	2,012.3	0.00	0.00	0.00



Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 19-14E
Company:	Laramie Energy, LLC	TVD Reference:	well @ 7455 0usft (H&P #522)
Project:	Mesa County, CO	MD Reference:	well @ 7455 0usft (H&P #522)
Site:	Bruton 30-01 Pad	North Reference:	True
Well:	Bruton 19-14E	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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									
BRUTON 19-14E	0 00	0 00	7,755.0	2,001.6	-206.8	1,528,166.17	2,346,862.88	39.260779	-107.806983
- plan hits target center									
- Circle (radius 50 0)									

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,530.0	1,486.7	8 5/8"	8-5/8	11

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,810.4	2,655.0	G' Sand			
4,837.8	4,505.0	Williams Fork			
6,211.2	5,805.0	TOG			
7,211.2	6,805.0	Cameo			
7,871.2	7,465.0	Base Cameo Coal			
7,911.2	7,505.0	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')
1,305.0	1,281.4	166.3	-17.2	EOB @ 24.15° Inc. / 354.10° Azm
5,406.2	5,023.6	1,835.3	-189.6	Drop 3" / 100'
6,211.2	5,805.0	2,001.6	-206.8	EOD @ Vertical
8,161.2	7,755.0	2,001.6	-206.8	TD @ 8161' MD / 7755' TVD