



Project: Mesa County, CO
 Site: Bruton 30-01 Pad
 Well: Bruton 19-12E
 Wellbore: Wellbore #1
 Design: Design #1
 Latitude: 39.255294
 Longitude: -107.806219
 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-ordinates (N/E) Reference: Well Bruton 19-12E, True North
 Vertical (TVD) Reference: well @ 7455.0usft (H&P #522)
 Section (VS) Reference: Slot - (0.0N, 0.0E)
 Measured Depth Reference: well @ 7455.0usft (H&P #522)
 Calculation Method: Minimum Curvature

WELL DETAILS: Bruton 19-12E

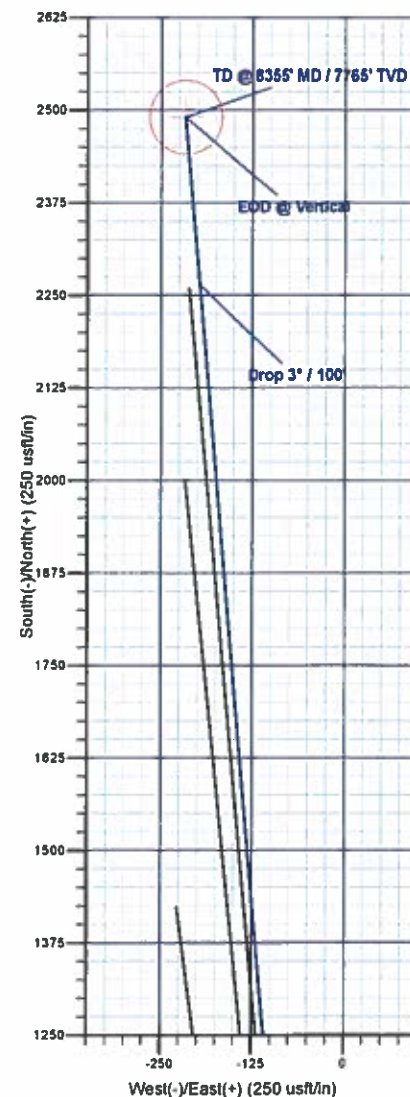
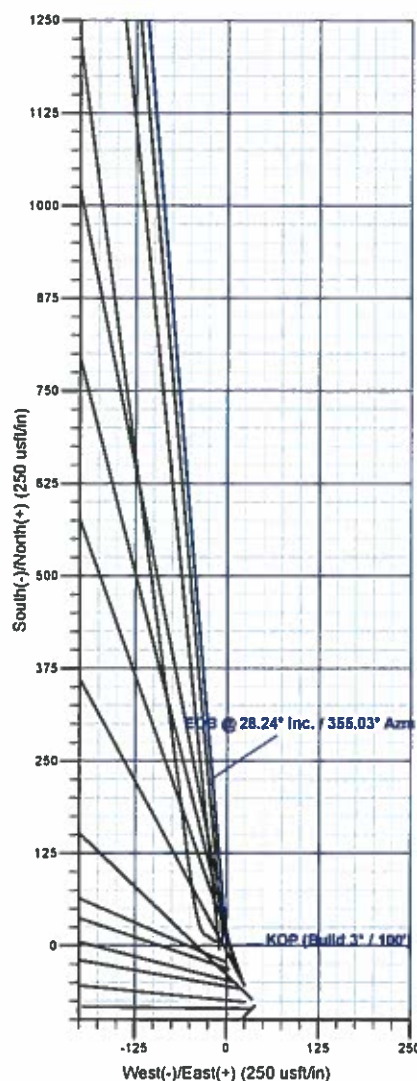
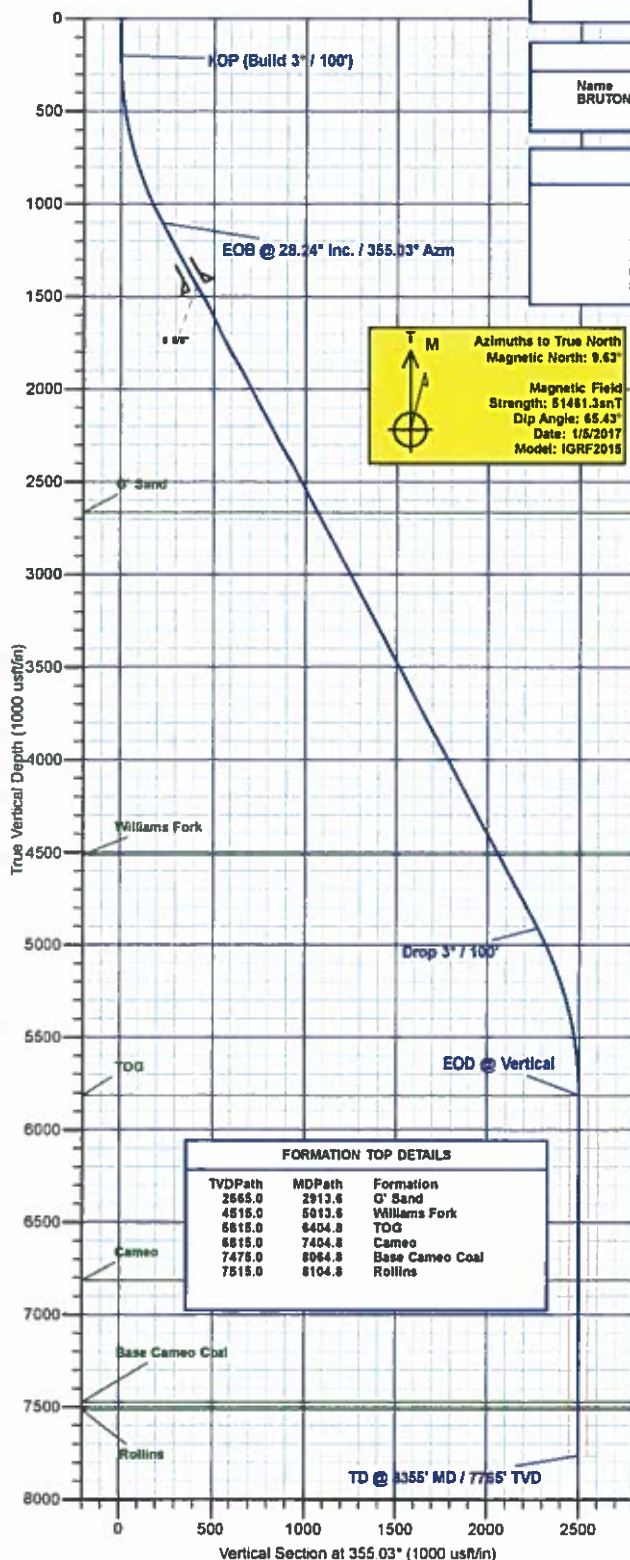
+N/-S	+E/-W	Northing	Ground Level: Easting	Latitude	Longitude
0.0	0.0	1526162.73	2347028.30	39.255294	-107.806219

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BRUTON 19-12E	7765.0	2490.4	-216.8	1528658.81	2346874.82	39.262132	-107.806985

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')
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	EOB @ 28.24° Inc. / 355.03° Azm
1141.4	28.24	355.03	1103.7	226.5	-19.7	3.00	355.03	227.3	Drop 3" / 100'
8463.4	28.24	355.03	4911.3	2263.9	-197.0	0.00	0.00	2272.5	EOB @ Vertical
6464.8	0.00	0.00	5815.0	2490.4	-216.8	3.00	180.00	2499.8	TD @ 8355' MD / 7765' TVD
8354.8	0.00	0.00	7765.0	2490.4	-216.8	0.00	0.00	2499.8	



Created By: Will Jircik Date: 17:16, January 10 2017



Laramie Energy, LLC

Mesa County, CO

Bruton 30-01 Pad

Bruton 19-12E

Wellbore #1

Plan: Design #1

QES Well Planning Report

10 January, 2017





Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 19-12E
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 19-12E	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 19-12E			
Well Position	+N/-S	85.0 usft	Northing:	1,526,163.74 usft
	+E/-W	-30.7 usft	Easting:	2,347,028.30 usft
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) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	355.03

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	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,141.4	28.24	355.03	1,103.7	226.5	-19.7	3.00	3.00	0.00	355.03	
5,463.4	28.24	355.03	4,911.3	2,263.9	-197.0	0.00	0.00	0.00	0.00	
6,404.8	0.00	0.00	5,815.0	2,490.4	-216.8	3.00	-3.00	0.00	180.00	
8,354.8	0.00	0.00	7,765.0	2,490.4	-216.8	0.00	0.00	0.00	0.00	BRUTON 19-12E



Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 19-12E
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 19-12E	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
KOP (Build 3° / 100')									
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	3.00	355.03	300.0	2.6	-0.2	2.6	3.00	3.00	0.00
400.0	6.00	355.03	399.6	10.4	-0.9	10.5	3.00	3.00	0.00
500.0	9.00	355.03	498.8	23.4	-2.0	23.5	3.00	3.00	0.00
600.0	12.00	355.03	597.1	41.6	-3.6	41.7	3.00	3.00	0.00
700.0	15.00	355.03	694.3	64.8	-5.6	65.1	3.00	3.00	0.00
800.0	18.00	355.03	790.2	93.1	-8.1	93.5	3.00	3.00	0.00
900.0	21.00	355.03	884.4	126.4	-11.0	126.9	3.00	3.00	0.00
1,000.0	24.00	355.03	976.8	164.5	-14.3	165.1	3.00	3.00	0.00
1,100.0	27.00	355.03	1,067.1	207.4	-18.0	208.2	3.00	3.00	0.00
EOB @ 28.24° Inc. / 355.03° Azm									
1,141.4	28.24	355.03	1,103.7	226.5	-19.7	227.3	3.00	3.00	0.00
1,200.0	28.24	355.03	1,155.4	254.1	-22.1	255.1	0.00	0.00	0.00
1,300.0	28.24	355.03	1,243.5	301.3	-26.2	302.4	0.00	0.00	0.00
1,400.0	28.24	355.03	1,331.6	348.4	-30.3	349.7	0.00	0.00	0.00
1,500.0	28.24	355.03	1,419.7	395.5	-34.4	397.0	0.00	0.00	0.00
8 5/8"									
1,530.0	28.24	355.03	1,446.1	409.7	-35.7	411.2	0.00	0.00	0.00
1,600.0	28.24	355.03	1,507.7	442.7	-38.5	444.4	0.00	0.00	0.00
1,700.0	28.24	355.03	1,595.8	489.8	-42.6	491.7	0.00	0.00	0.00
1,800.0	28.24	355.03	1,683.9	537.0	-46.7	539.0	0.00	0.00	0.00
1,900.0	28.24	355.03	1,772.0	584.1	-50.8	586.3	0.00	0.00	0.00
2,000.0	28.24	355.03	1,860.1	631.2	-54.9	633.6	0.00	0.00	0.00
2,100.0	28.24	355.03	1,948.2	678.4	-59.0	680.9	0.00	0.00	0.00
2,200.0	28.24	355.03	2,036.3	725.5	-63.1	728.3	0.00	0.00	0.00
2,300.0	28.24	355.03	2,124.4	772.7	-67.3	775.6	0.00	0.00	0.00
2,400.0	28.24	355.03	2,212.5	819.8	-71.4	822.9	0.00	0.00	0.00
2,500.0	28.24	355.03	2,300.6	866.9	-75.5	870.2	0.00	0.00	0.00
2,600.0	28.24	355.03	2,388.7	914.1	-79.6	917.5	0.00	0.00	0.00
2,700.0	28.24	355.03	2,476.8	961.2	-83.7	964.9	0.00	0.00	0.00
2,800.0	28.24	355.03	2,564.9	1,008.4	-87.8	1,012.2	0.00	0.00	0.00
2,900.0	28.24	355.03	2,653.0	1,055.5	-91.9	1,059.5	0.00	0.00	0.00
G' Sand									
2,913.6	28.24	355.03	2,665.0	1,061.9	-92.4	1,065.9	0.00	0.00	0.00
3,000.0	28.24	355.03	2,741.1	1,102.6	-96.0	1,106.8	0.00	0.00	0.00
3,100.0	28.24	355.03	2,829.2	1,149.8	-100.1	1,154.1	0.00	0.00	0.00
3,200.0	28.24	355.03	2,917.3	1,196.9	-104.2	1,201.4	0.00	0.00	0.00
3,300.0	28.24	355.03	3,005.4	1,244.1	-108.3	1,248.8	0.00	0.00	0.00
3,400.0	28.24	355.03	3,093.5	1,291.2	-112.4	1,296.1	0.00	0.00	0.00
3,500.0	28.24	355.03	3,181.6	1,338.3	-116.5	1,343.4	0.00	0.00	0.00
3,600.0	28.24	355.03	3,269.7	1,385.5	-120.6	1,390.7	0.00	0.00	0.00
3,700.0	28.24	355.03	3,357.8	1,432.6	-124.7	1,438.0	0.00	0.00	0.00
3,800.0	28.24	355.03	3,445.9	1,479.8	-128.8	1,485.4	0.00	0.00	0.00
3,900.0	28.24	355.03	3,534.0	1,526.9	-132.9	1,532.7	0.00	0.00	0.00
4,000.0	28.24	355.03	3,622.1	1,574.0	-137.0	1,580.0	0.00	0.00	0.00
4,100.0	28.24	355.03	3,710.2	1,621.2	-141.1	1,627.3	0.00	0.00	0.00
4,200.0	28.24	355.03	3,798.3	1,668.3	-145.2	1,674.6	0.00	0.00	0.00
4,300.0	28.24	355.03	3,886.4	1,715.5	-149.3	1,721.9	0.00	0.00	0.00
4,400.0	28.24	355.03	3,974.5	1,762.6	-153.4	1,769.3	0.00	0.00	0.00
4,500.0	28.24	355.03	4,062.5	1,809.7	-157.5	1,816.6	0.00	0.00	0.00
4,600.0	28.24	355.03	4,150.6	1,856.9	-161.6	1,863.9	0.00	0.00	0.00



Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 19-12E
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 19-12E	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	28.24	355.03	4,238.7	1,904.0	-165.7	1,911.2	0.00	0.00	0.00
4,800.0	28.24	355.03	4,326.8	1,951.2	-169.8	1,958.5	0.00	0.00	0.00
4,900.0	28.24	355.03	4,414.9	1,998.3	-173.9	2,005.9	0.00	0.00	0.00
5,000.0	28.24	355.03	4,503.0	2,045.4	-178.0	2,053.2	0.00	0.00	0.00
Williams Fork									
5,013.6	28.24	355.03	4,515.0	2,051.8	-178.6	2,059.6	0.00	0.00	0.00
5,100.0	28.24	355.03	4,591.1	2,092.6	-182.1	2,100.5	0.00	0.00	0.00
5,200.0	28.24	355.03	4,679.2	2,139.7	-186.2	2,147.8	0.00	0.00	0.00
5,300.0	28.24	355.03	4,767.3	2,186.9	-190.3	2,195.1	0.00	0.00	0.00
5,400.0	28.24	355.03	4,855.4	2,234.0	-194.4	2,242.4	0.00	0.00	0.00
Drop 3° / 100'									
5,463.4	28.24	355.03	4,911.3	2,263.9	-197.0	2,272.5	0.00	0.00	0.00
5,500.0	27.14	355.03	4,943.7	2,280.8	-198.5	2,289.5	3.00	-3.00	0.00
5,600.0	24.14	355.03	5,033.8	2,323.9	-202.3	2,332.7	3.00	-3.00	0.00
5,700.0	21.14	355.03	5,126.1	2,362.3	-205.6	2,371.2	3.00	-3.00	0.00
5,800.0	18.14	355.03	5,220.3	2,395.8	-208.5	2,404.8	3.00	-3.00	0.00
5,900.0	15.14	355.03	5,316.1	2,424.3	-211.0	2,433.5	3.00	-3.00	0.00
6,000.0	12.14	355.03	5,413.2	2,447.8	-213.1	2,457.1	3.00	-3.00	0.00
6,100.0	9.14	355.03	5,511.5	2,466.2	-214.7	2,475.5	3.00	-3.00	0.00
6,200.0	6.14	355.03	5,610.6	2,479.4	-215.8	2,488.8	3.00	-3.00	0.00
6,300.0	3.14	355.03	5,710.3	2,487.5	-216.5	2,496.9	3.00	-3.00	0.00
6,400.0	0.14	355.03	5,810.2	2,490.4	-216.8	2,499.8	3.00	-3.00	0.00
EOD @ Vertical - TOG									
6,404.8	0.00	0.00	5,815.0	2,490.4	-216.8	2,499.8	3.00	-3.00	0.00
6,500.0	0.00	0.00	5,910.2	2,490.4	-216.8	2,499.8	0.00	0.00	0.00
6,600.0	0.00	0.00	6,010.2	2,490.4	-216.8	2,499.8	0.00	0.00	0.00
6,700.0	0.00	0.00	6,110.2	2,490.4	-216.8	2,499.8	0.00	0.00	0.00
6,800.0	0.00	0.00	6,210.2	2,490.4	-216.8	2,499.8	0.00	0.00	0.00
6,900.0	0.00	0.00	6,310.2	2,490.4	-216.8	2,499.8	0.00	0.00	0.00
7,000.0	0.00	0.00	6,410.2	2,490.4	-216.8	2,499.8	0.00	0.00	0.00
7,100.0	0.00	0.00	6,510.2	2,490.4	-216.8	2,499.8	0.00	0.00	0.00
7,200.0	0.00	0.00	6,610.2	2,490.4	-216.8	2,499.8	0.00	0.00	0.00
7,300.0	0.00	0.00	6,710.2	2,490.4	-216.8	2,499.8	0.00	0.00	0.00
7,400.0	0.00	0.00	6,810.2	2,490.4	-216.8	2,499.8	0.00	0.00	0.00
Cameo									
7,404.8	0.00	0.00	6,815.0	2,490.4	-216.8	2,499.8	0.00	0.00	0.00
7,500.0	0.00	0.00	6,910.2	2,490.4	-216.8	2,499.8	0.00	0.00	0.00
7,600.0	0.00	0.00	7,010.2	2,490.4	-216.8	2,499.8	0.00	0.00	0.00
7,700.0	0.00	0.00	7,110.2	2,490.4	-216.8	2,499.8	0.00	0.00	0.00
7,800.0	0.00	0.00	7,210.2	2,490.4	-216.8	2,499.8	0.00	0.00	0.00
7,900.0	0.00	0.00	7,310.2	2,490.4	-216.8	2,499.8	0.00	0.00	0.00
8,000.0	0.00	0.00	7,410.2	2,490.4	-216.8	2,499.8	0.00	0.00	0.00
Base Cameo Coat									
8,064.8	0.00	0.00	7,475.0	2,490.4	-216.8	2,499.8	0.00	0.00	0.00
8,100.0	0.00	0.00	7,510.2	2,490.4	-216.8	2,499.8	0.00	0.00	0.00
Rollins									
8,104.8	0.00	0.00	7,515.0	2,490.4	-216.8	2,499.8	0.00	0.00	0.00
8,200.0	0.00	0.00	7,610.2	2,490.4	-216.8	2,499.8	0.00	0.00	0.00
8,300.0	0.00	0.00	7,710.2	2,490.4	-216.8	2,499.8	0.00	0.00	0.00
TD @ 8355' MD / 7765' TVD									
8,354.8	0.00	0.00	7,765.0	2,490.4	-216.8	2,499.8	0.00	0.00	0.00



Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 19-12E
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 19-12E	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 19-12E	0.00	0.00	7,765.0	2,490.4	-216.8	1,528,658.81	2,346,874.82	39.262132	-107.806985
- plan hits target center									
- Circle (radius 50.0)									

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,530.0	1,446.1	8 5/8"	8-5/8	11

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,913.6	2,736.0	G' Sand			
5,013.6	4,586.0	Williams Fork			
6,404.8	5,886.0	TOG			
7,404.8	6,886.0	Cameo			
8,064.8	7,546.0	Base Cameo Coal			
8,104.8	7,586.0	Rollins			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
200.0	200.0	0.0	0.0	KOP (Build 3" / 100')
1,141.4	1,103.7	226.5	-19.7	EOB @ 28.24° Inc. / 355.03° Azm
5,463.4	4,911.3	2,263.9	-197.0	Drop 3" / 100'
6,404.8	5,815.0	2,490.4	-216.8	EOD @ Vertical
8,354.8	7,765.0	2,490.4	-216.8	TD @ 8355' MD / 7765' TVD