



Project: Mesa County, CO
 Site: Bruton 30-03 Pad
 Well: Bruton 30-05E
 Wellbore: Wellbore #1
 Design: Design #1
 Latitude: 39.252644
 Longitude: -107.814275
 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 30-05E, 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 30-05E

Ground Level: 7512.0
 +N-S +E-W Northing Easting Latitude Longitude
 0.0 0.0 1528256.72 2344723.39 39.252644 -107.814275

DESIGN TARGET DETAILS

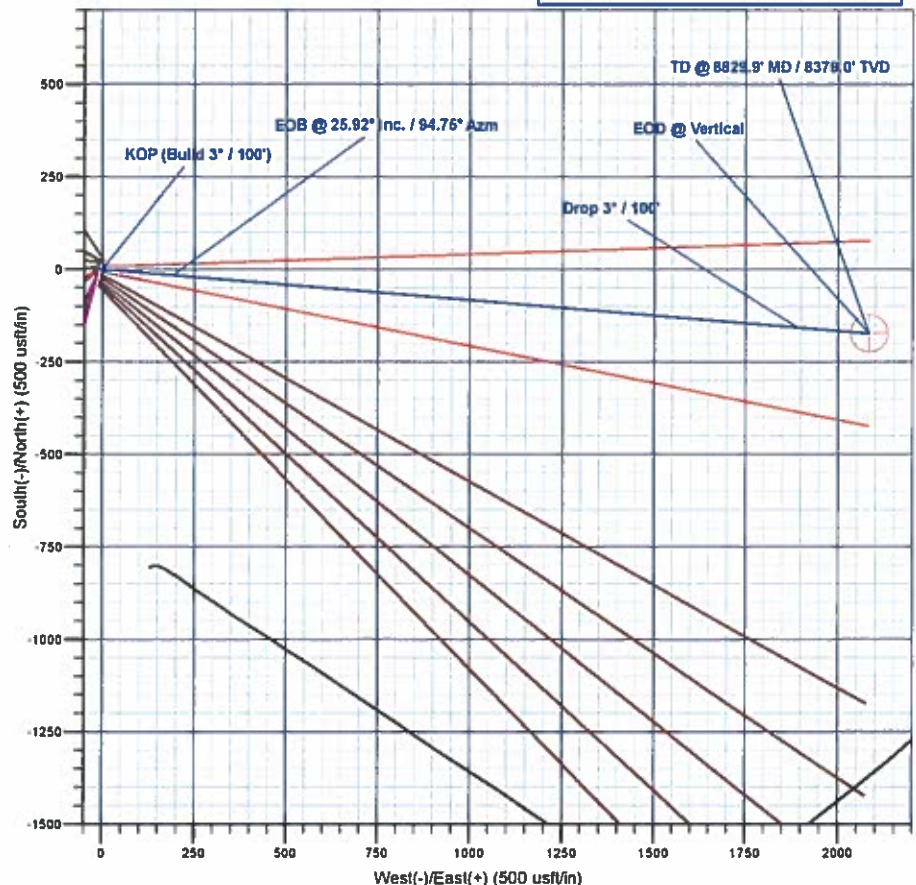
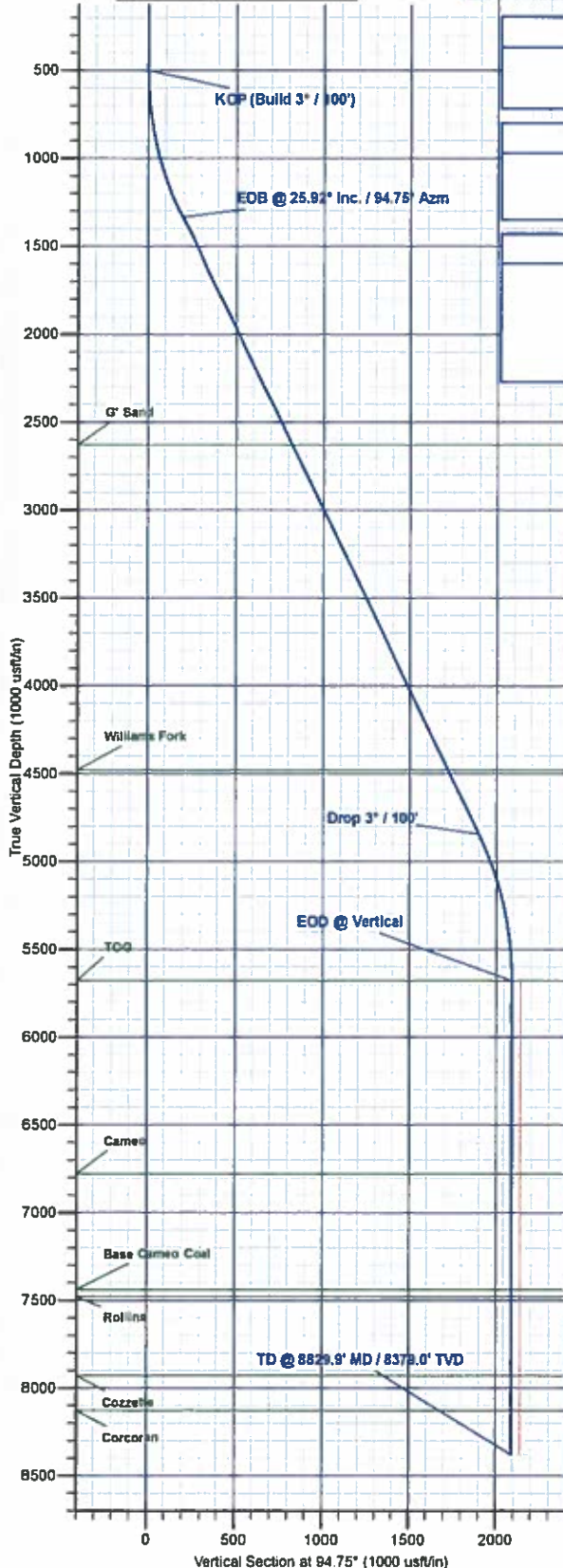
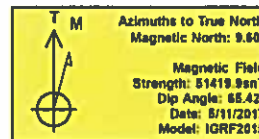
Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
PBHL - Bruton 30-05E	8379.0	-172.9	2082.8	1525030.81	2346801.08	39.252169	-107.806920

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')
1384.1	25.92	94.75	1334.9	-15.9	191.5	3.00	94.75	192.1	EOB @ 25.92° Inc. / 94.75° Azm
5265.8	25.92	94.75	4844.1	-157.0	1891.3	0.00	0.00	1897.8	Drop 3" / 100'
6129.9	0.00	0.00	5679.0	-172.9	2082.8	3.00	190.00	2089.9	EOB @ Vertical
8829.9	0.00	0.00	8379.0	-172.9	2082.8	0.00	0.00	2089.9	TD @ 8829.9' MD / 8379.0' TVD

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
2629.0	2802.9	G' Sand
4479.0	4859.9	Williams Fork
5679.0	6129.9	TOG
6779.0	7229.9	Cameo
7439.0	7889.9	Base Cameo Coal
7479.0	7929.9	Rollins
7929.0	8379.9	Cozzette
8129.0	8579.9	Corcoran



Plan: Design #1 (Bruton 30-05E/Wellbore #1)

Created By: Will Jirclik Date: 13:54, May 15 2017



Laramie Energy, LLC

Mesa County, CO

Bruton 30-03 Pad

Bruton 30-05E

Wellbore #1

Plan: Design #1

QES Well Planning Report

15 May, 2017





Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 30-05E
Company:	Laramie Energy, LLC	TVD Reference:	well @ 7534.0usft (H&P #290)
Project:	Mesa County, CO	MD Reference:	well @ 7534.0usft (H&P #290)
Site:	Bruton 30-03 Pad	North Reference:	True
Well:	Bruton 30-05E	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 30-03 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 30-05E			
Well Position	+N/-S	-24.5 usft	Northing:	1,525,256.72 usft
	+E/-W	3.9 usft	Easting:	2,344,723.39 usft
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	94.75

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	
1,364.1	25.92	94.75	1,334.9	-15.9	191.5	3.00	3.00	0.00	94.75	
5,265.8	25.92	94.75	4,844.1	-157.0	1,891.3	0.00	0.00	0.00	0.00	
6,129.9	0.00	0.00	5,679.0	-172.9	2,082.8	3.00	-3.00	0.00	180.00	
8,829.9	0.00	0.00	8,379.0	-172.9	2,082.8	0.00	0.00	0.00	0.00	PBHL - Bruton 30-05E



Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 30-05E
Company:	Laramie Energy, LLC	TVD Reference:	well @ 7534.0usft (H&P #280)
Project:	Mesa County, CO	MD Reference:	well @ 7534.0usft (H&P #290)
Site:	Bruton 30-03 Pad	North Reference:	True
Well:	Bruton 30-05E	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	94.75	600.0	-0.2	2.6	2.6	3.00	3.00	0.00
700.0	6.00	94.75	699.6	-0.9	10.4	10.5	3.00	3.00	0.00
800.0	9.00	94.75	798.8	-1.9	23.4	23.5	3.00	3.00	0.00
900.0	12.00	94.75	897.1	-3.5	41.6	41.7	3.00	3.00	0.00
1,000.0	15.00	94.75	994.3	-5.4	64.9	65.1	3.00	3.00	0.00
1,100.0	18.00	94.75	1,090.2	-7.7	93.2	93.5	3.00	3.00	0.00
1,200.0	21.00	94.75	1,184.4	-10.5	126.4	126.9	3.00	3.00	0.00
1,300.0	24.00	94.75	1,276.8	-13.7	164.5	165.1	3.00	3.00	0.00
EOB @ 25.92° Inc. / 94.75° Azm									
1,364.1	25.92	94.75	1,334.9	-15.9	191.5	192.1	3.00	3.00	0.00
1,400.0	25.92	94.75	1,367.2	-17.2	207.1	207.9	0.00	0.00	0.00
1,500.0	25.92	94.75	1,457.1	-20.8	250.7	251.6	0.00	0.00	0.00
8 5/8"									
1,522.0	25.92	94.75	1,476.9	-21.6	260.3	261.2	0.00	0.00	0.00
1,600.0	25.92	94.75	1,547.1	-24.4	294.3	295.3	0.00	0.00	0.00
1,700.0	25.92	94.75	1,637.0	-28.0	337.8	339.0	0.00	0.00	0.00
1,800.0	25.92	94.75	1,727.0	-31.7	381.4	382.7	0.00	0.00	0.00
1,900.0	25.92	94.75	1,816.9	-35.3	425.0	426.4	0.00	0.00	0.00
2,000.0	25.92	94.75	1,906.8	-38.9	468.5	470.1	0.00	0.00	0.00
2,100.0	25.92	94.75	1,996.8	-42.5	512.1	513.9	0.00	0.00	0.00
2,200.0	25.92	94.75	2,086.7	-46.1	555.7	557.6	0.00	0.00	0.00
2,300.0	25.92	94.75	2,176.7	-49.7	599.2	601.3	0.00	0.00	0.00
2,400.0	25.92	94.75	2,266.6	-53.4	642.8	645.0	0.00	0.00	0.00
2,500.0	25.92	94.75	2,356.5	-57.0	686.4	688.7	0.00	0.00	0.00
2,600.0	25.92	94.75	2,446.5	-60.6	729.9	732.4	0.00	0.00	0.00
2,700.0	25.92	94.75	2,536.4	-64.2	773.5	776.1	0.00	0.00	0.00
2,800.0	25.92	94.75	2,626.4	-67.8	817.1	819.9	0.00	0.00	0.00
G' Sand									
2,802.9	25.92	94.75	2,629.0	-67.9	818.3	821.1	0.00	0.00	0.00
2,900.0	25.92	94.75	2,716.3	-71.4	860.6	863.6	0.00	0.00	0.00
3,000.0	25.92	94.75	2,806.2	-75.1	904.2	907.3	0.00	0.00	0.00
3,100.0	25.92	94.75	2,896.2	-78.7	947.7	951.0	0.00	0.00	0.00
3,200.0	25.92	94.75	2,986.1	-82.3	991.3	994.7	0.00	0.00	0.00
3,300.0	25.92	94.75	3,076.1	-85.9	1,034.9	1,038.4	0.00	0.00	0.00
3,400.0	25.92	94.75	3,166.0	-89.5	1,078.4	1,082.1	0.00	0.00	0.00
3,500.0	25.92	94.75	3,255.9	-93.1	1,122.0	1,125.9	0.00	0.00	0.00
3,600.0	25.92	94.75	3,345.9	-96.8	1,165.6	1,169.6	0.00	0.00	0.00
3,700.0	25.92	94.75	3,435.8	-100.4	1,209.1	1,213.3	0.00	0.00	0.00
3,800.0	25.92	94.75	3,525.7	-104.0	1,252.7	1,257.0	0.00	0.00	0.00
3,900.0	25.92	94.75	3,615.7	-107.6	1,296.3	1,300.7	0.00	0.00	0.00
4,000.0	25.92	94.75	3,705.6	-111.2	1,339.8	1,344.4	0.00	0.00	0.00
4,100.0	25.92	94.75	3,795.6	-114.8	1,383.4	1,388.1	0.00	0.00	0.00
4,200.0	25.92	94.75	3,885.5	-118.5	1,427.0	1,431.9	0.00	0.00	0.00
4,300.0	25.92	94.75	3,975.4	-122.1	1,470.5	1,475.6	0.00	0.00	0.00
4,400.0	25.92	94.75	4,065.4	-125.7	1,514.1	1,519.3	0.00	0.00	0.00
4,500.0	25.92	94.75	4,155.3	-129.3	1,557.6	1,563.0	0.00	0.00	0.00
4,600.0	25.92	94.75	4,245.3	-132.9	1,601.2	1,606.7	0.00	0.00	0.00



Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 30-05E
Company:	Laramie Energy, LLC	TVD Reference:	well @ 7534.0usft (H&P #290)
Project:	Mesa County, CO	MD Reference:	well @ 7534.0usft (H&P #290)
Site:	Bruton 30-03 Pad	North Reference:	True
Well:	Bruton 30-05E	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	25.92	94.75	4,335.2	-136.5	1,644.8	1,650.4	0.00	0.00	0.00
4,800.0	25.92	94.75	4,425.1	-140.2	1,688.3	1,694.1	0.00	0.00	0.00
Williams Fork									
4,859.9	25.92	94.75	4,479.0	-142.3	1,714.4	1,720.3	0.00	0.00	0.00
4,900.0	25.92	94.75	4,515.1	-143.8	1,731.9	1,737.9	0.00	0.00	0.00
5,000.0	25.92	94.75	4,605.0	-147.4	1,775.5	1,781.6	0.00	0.00	0.00
5,100.0	25.92	94.75	4,695.0	-151.0	1,819.0	1,825.3	0.00	0.00	0.00
5,200.0	25.92	94.75	4,784.9	-154.6	1,862.6	1,869.0	0.00	0.00	0.00
Drop 3° / 100'									
5,265.8	25.92	94.75	4,844.1	-157.0	1,891.3	1,897.8	0.00	0.00	0.00
5,300.0	24.90	94.75	4,875.0	-158.2	1,905.9	1,912.4	3.00	-3.00	0.00
5,400.0	21.90	94.75	4,966.7	-161.5	1,945.5	1,952.2	3.00	-3.00	0.00
5,500.0	18.90	94.75	5,060.5	-164.4	1,980.2	1,987.0	3.00	-3.00	0.00
5,600.0	15.90	94.75	5,155.8	-166.9	2,010.0	2,016.9	3.00	-3.00	0.00
5,700.0	12.90	94.75	5,252.7	-168.9	2,034.8	2,041.8	3.00	-3.00	0.00
5,800.0	9.90	94.75	5,350.7	-170.6	2,054.4	2,061.5	3.00	-3.00	0.00
5,900.0	6.90	94.75	5,449.6	-171.8	2,069.0	2,076.1	3.00	-3.00	0.00
6,000.0	3.90	94.75	5,549.2	-172.5	2,078.4	2,085.5	3.00	-3.00	0.00
6,100.0	0.90	94.75	5,649.1	-172.9	2,082.5	2,089.7	3.00	-3.00	0.00
EOD @ Vertical - TOG									
6,129.9	0.00	0.00	5,679.0	-172.9	2,082.8	2,089.9	3.00	-3.00	-316.81
6,200.0	0.00	0.00	5,749.1	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
6,300.0	0.00	0.00	5,849.1	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
6,400.0	0.00	0.00	5,949.1	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
6,500.0	0.00	0.00	6,049.1	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
6,600.0	0.00	0.00	6,149.1	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
6,700.0	0.00	0.00	6,249.1	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
6,800.0	0.00	0.00	6,349.1	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
6,900.0	0.00	0.00	6,449.1	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
7,000.0	0.00	0.00	6,549.1	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
7,100.0	0.00	0.00	6,649.1	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
7,200.0	0.00	0.00	6,749.1	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
Cameo									
7,229.9	0.00	0.00	6,779.0	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
7,300.0	0.00	0.00	6,849.1	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
7,400.0	0.00	0.00	6,949.1	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
7,500.0	0.00	0.00	7,049.1	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
7,600.0	0.00	0.00	7,149.1	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
7,700.0	0.00	0.00	7,249.1	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
7,800.0	0.00	0.00	7,349.1	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
Base Cameo Coal									
7,889.9	0.00	0.00	7,439.0	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
7,900.0	0.00	0.00	7,449.1	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
Rollins									
7,929.9	0.00	0.00	7,479.0	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
8,000.0	0.00	0.00	7,549.1	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
8,100.0	0.00	0.00	7,649.1	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
8,200.0	0.00	0.00	7,749.1	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
8,300.0	0.00	0.00	7,849.1	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
Cozzette									
8,379.9	0.00	0.00	7,929.0	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
8,400.0	0.00	0.00	7,949.1	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
8,500.0	0.00	0.00	8,049.1	-172.9	2,082.8	2,089.9	0.00	0.00	0.00



Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 30-05E
Company:	Laramie Energy, LLC	TVD Reference:	well @ 7534 0usft (H&P #290)
Project:	Mesa County, CO	MD Reference:	well @ 7534 0usft (H&P #290)
Site:	Bruton 30-03 Pad	North Reference:	True
Well:	Bruton 30-05E	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)
Corcoran									
8,579.9	0.00	0.00	8,129.0	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
8,600.0	0.00	0.00	8,149.1	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
8,700.0	0.00	0.00	8,249.1	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
8,800.0	0.00	0.00	8,349.1	-172.9	2,082.8	2,089.9	0.00	0.00	0.00
TD @ 8829.9' MD / 8379.0' TVD - TD									
8,829.9	0.00	0.00	8,379.0	-172.9	2,082.8	2,089.9	0.00	0.00	0.00

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 30-05E - plan hits target center - Point	0.00	0.00	8,379.0	-172.9	2,082.8	1,525,030.82	2,346,801.09	39.252169	-107.806920

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,522.0	1,476.9	8 5/8"	8-5/8	11

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,802.9	2,829.0	G' Sand			
4,859.9	4,479.0	Williams Fork			
6,129.9	5,679.0	TOG			
7,229.9	6,779.0	Cameo			
7,889.9	7,439.0	Base Cameo Coal			
7,929.9	7,479.0	Rollins			
8,379.9	7,929.0	Cozzette			
8,579.9	8,129.0	Corcoran			
8,829.9	8,379.0	TD			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
500.0	500.0	0.0	0.0	KOP (Build 3" / 100')
1,364.1	1,334.9	-15.9	191.5	EOB @ 25.92° Inc. / 94.75° Azm
5,265.8	4,844.1	-157.0	1,891.3	Drop 3" / 100'
6,129.9	5,679.0	-172.9	2,082.8	EOD @ Vertical
8,829.9	8,379.0	-172.9	2,082.8	TD @ 8829.9' MD / 8379.0' TVD