



Project: Mesa County, CO
 Site: Bruton 30-03 Pad
 Well: Bruton 30-06E
 Wellbore: Wellbore #1
 Design: Design #1
 Latitude: 39.252625
 Longitude: -107.814281
 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 30-06E, True North
 Vertical (TVD) Reference: well @ 7534.0usft (H&P #290)
 Section (VS) Reference: Siot - (0.0N, 0.0E)
 Measured Depth Reference: well @ 7534.0usft (H&P #290)
 Calculation Method: Minimum Curvature

WELL DETAILS: Bruton 30-06E

Ground Level: 7512.0
 +N/-S +E/-W Northing Easting Latitude Longitude
 0.0 0.0 1525249.85 2344721.51 39.252625 -107.814281

DESIGN TARGET DETAILS

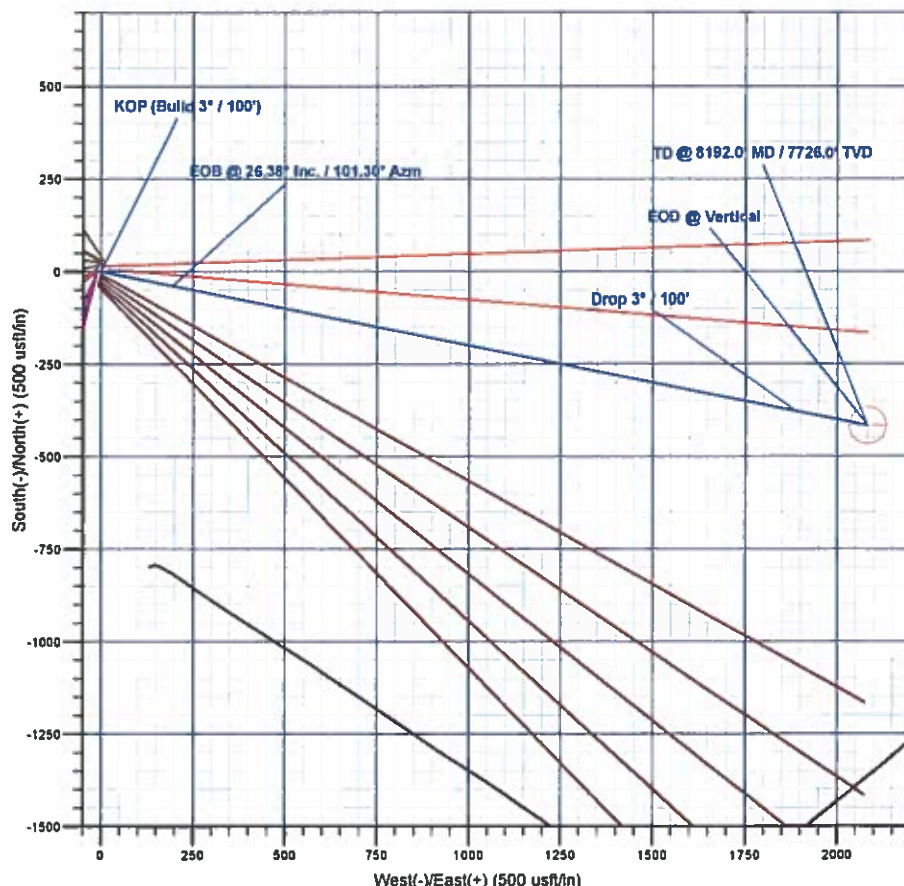
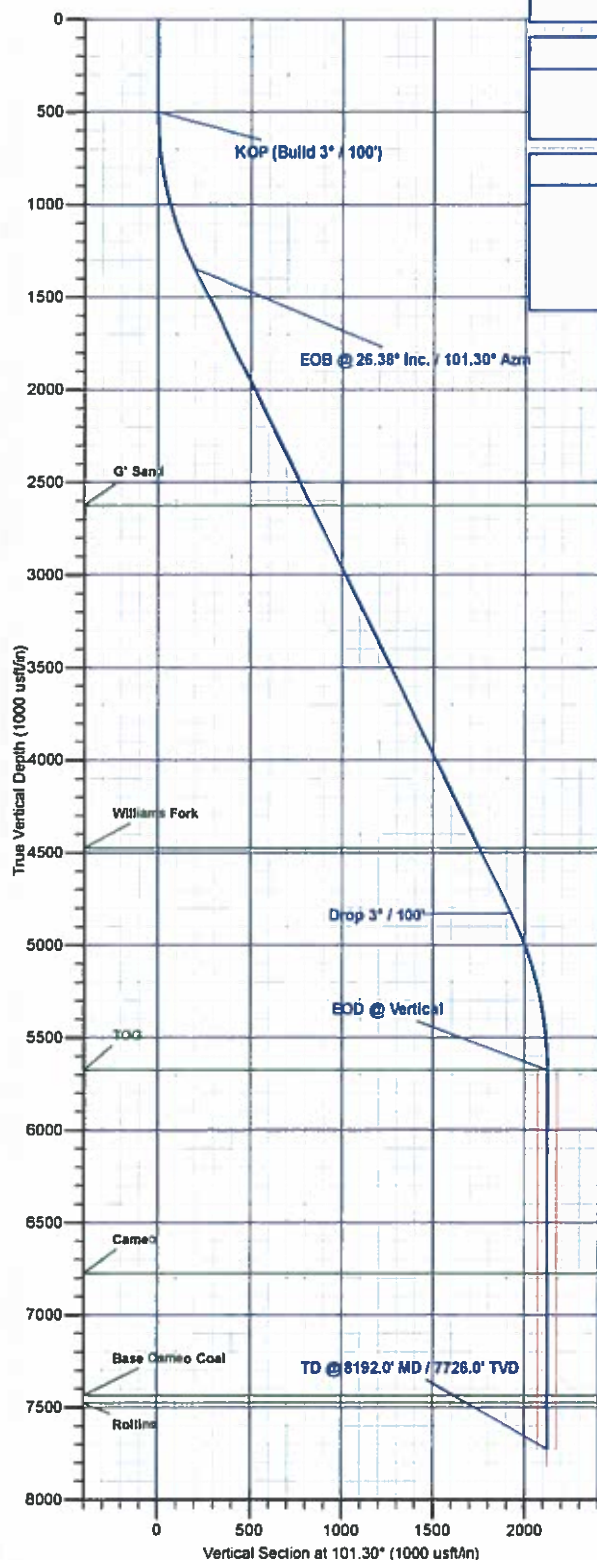
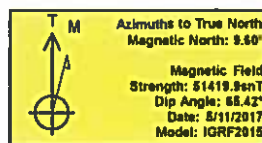
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL - Bruton 30-06E	7726.0	-416.2	2082.2	1524780.74	2346792.47	39.251482	-107.806928

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Diag	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')
1379.5	26.38	101.30	1348.7	-39.0	198.1	3.00	101.30	198.9	EOB @ 26.38° Inc. / 101.30° Azm
5262.5	26.38	101.30	4827.3	-377.2	1887.2	0.00	0.00	1924.5	Drop 3° / 100'
6142.0	0.00	0.00	5676.0	-416.2	2082.2	3.00	180.00	2123.4	EOD @ Vertical
8192.0	0.00	0.00	7726.0	-416.2	2082.2	0.00	0.00	2123.4	TD @ 8192.0' MD / 7726.0' TVD

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
2826.0	2805.3	G' Sand
4476.0	4870.4	Williams Fork
5676.0	6142.0	TOG
6776.0	7242.0	Cameo
7436.0	7902.0	Base Cameo Coal
7476.0	7942.0	Rollins



Plan: Design #1 (Bruton 30-06E/Wellbore #1)

Created By: Will Jircik Date: 13:59, May 15 2017



Laramie Energy, LLC

Mesa County, CO

Bruton 30-03 Pad

Bruton 30-06E

Wellbore #1

Plan: Design #1

QES Well Planning Report

15 May, 2017





Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 30-06E
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 30-06E	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 30-06E			
Well Position	+N/-S	-31.4 usft	Northing:	1,525,249.85 usft
	+E/-W	2.2 usft	Easting:	2,344,721.52 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	101.30

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	
500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,379.5	26.38	101.30	1,348.7	-39.0	195.1	3.00	3.00	0.00	101.30	
5,262.5	26.38	101.30	4,827.3	-377.2	1,887.2	0.00	0.00	0.00	0.00	
6,142.0	0.00	0.00	5,676.0	-416.2	2,082.2	3.00	-3.00	0.00	180.00	
8,192.0	0.00	0.00	7,726.0	-416.2	2,082.2	0.00	0.00	0.00	0.00	PBHL - Bruton 30-06E



Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 30-06E
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 30-06E	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	101.30	600.0	-0.5	2.6	2.6	3.00	3.00	0.00
700.0	6.00	101.30	699.6	-2.1	10.3	10.5	3.00	3.00	0.00
800.0	9.00	101.30	798.8	-4.6	23.1	23.5	3.00	3.00	0.00
900.0	12.00	101.30	897.1	-8.2	40.9	41.7	3.00	3.00	0.00
1,000.0	15.00	101.30	994.3	-12.8	63.8	65.1	3.00	3.00	0.00
1,100.0	18.00	101.30	1,090.2	-18.3	91.7	93.5	3.00	3.00	0.00
1,200.0	21.00	101.30	1,184.4	-24.9	124.4	126.9	3.00	3.00	0.00
1,300.0	24.00	101.30	1,276.8	-32.4	161.9	165.1	3.00	3.00	0.00
EOB @ 26.38° Inc. / 101.30° Azm									
1,379.5	26.38	101.30	1,348.7	-39.0	195.1	198.9	3.00	3.00	0.00
1,400.0	26.38	101.30	1,367.1	-40.8	204.0	208.1	0.00	0.00	0.00
1,500.0	26.38	101.30	1,456.7	-49.5	247.6	252.5	0.00	0.00	0.00
8 5/8"									
1,522.0	26.38	101.30	1,476.4	-51.4	257.2	262.3	0.00	0.00	0.00
1,600.0	26.38	101.30	1,546.3	-58.2	291.2	296.9	0.00	0.00	0.00
1,700.0	26.38	101.30	1,635.9	-66.9	334.8	341.4	0.00	0.00	0.00
1,800.0	26.38	101.30	1,725.4	-75.6	378.3	385.8	0.00	0.00	0.00
1,900.0	26.38	101.30	1,815.0	-84.3	421.9	430.3	0.00	0.00	0.00
2,000.0	26.38	101.30	1,904.6	-93.0	465.5	474.7	0.00	0.00	0.00
2,100.0	26.38	101.30	1,994.2	-101.8	509.1	519.1	0.00	0.00	0.00
2,200.0	26.38	101.30	2,083.8	-110.5	552.6	563.6	0.00	0.00	0.00
2,300.0	26.38	101.30	2,173.4	-119.2	596.2	608.0	0.00	0.00	0.00
2,400.0	26.38	101.30	2,262.9	-127.9	639.8	652.4	0.00	0.00	0.00
2,500.0	26.38	101.30	2,352.5	-136.6	683.4	696.9	0.00	0.00	0.00
2,600.0	26.38	101.30	2,442.1	-145.3	726.9	741.3	0.00	0.00	0.00
2,700.0	26.38	101.30	2,531.7	-154.0	770.5	785.8	0.00	0.00	0.00
2,800.0	26.38	101.30	2,621.3	-162.7	814.1	830.2	0.00	0.00	0.00
G' Sand									
2,805.3	26.38	101.30	2,626.0	-163.2	816.4	832.5	0.00	0.00	0.00
2,900.0	26.38	101.30	2,710.9	-171.4	857.7	874.6	0.00	0.00	0.00
3,000.0	26.38	101.30	2,800.4	-180.1	901.2	919.1	0.00	0.00	0.00
3,100.0	26.38	101.30	2,890.0	-188.9	944.8	963.5	0.00	0.00	0.00
3,200.0	26.38	101.30	2,979.6	-197.6	988.4	1,007.9	0.00	0.00	0.00
3,300.0	26.38	101.30	3,069.2	-206.3	1,032.0	1,052.4	0.00	0.00	0.00
3,400.0	26.38	101.30	3,158.8	-215.0	1,075.5	1,096.8	0.00	0.00	0.00
3,500.0	26.38	101.30	3,248.4	-223.7	1,119.1	1,141.3	0.00	0.00	0.00
3,600.0	26.38	101.30	3,338.0	-232.4	1,162.7	1,185.7	0.00	0.00	0.00
3,700.0	26.38	101.30	3,427.5	-241.1	1,206.3	1,230.1	0.00	0.00	0.00
3,800.0	26.38	101.30	3,517.1	-249.8	1,249.8	1,274.6	0.00	0.00	0.00
3,900.0	26.38	101.30	3,606.7	-258.5	1,293.4	1,319.0	0.00	0.00	0.00
4,000.0	26.38	101.30	3,696.3	-267.2	1,337.0	1,363.4	0.00	0.00	0.00
4,100.0	26.38	101.30	3,785.9	-276.0	1,380.6	1,407.9	0.00	0.00	0.00
4,200.0	26.38	101.30	3,875.5	-284.7	1,424.2	1,452.3	0.00	0.00	0.00
4,300.0	26.38	101.30	3,965.0	-293.4	1,467.7	1,496.8	0.00	0.00	0.00
4,400.0	26.38	101.30	4,054.6	-302.1	1,511.3	1,541.2	0.00	0.00	0.00
4,500.0	26.38	101.30	4,144.2	-310.8	1,554.9	1,585.6	0.00	0.00	0.00
4,600.0	26.38	101.30	4,233.8	-319.5	1,598.5	1,630.1	0.00	0.00	0.00



Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 30-06E
Company:	Laramie Energy, LLC	TVD Reference:	well @ 7534.0usft (H&P #280)
Project:	Mesa County, CO	MD Reference:	well @ 7534.0usft (H&P #280)
Site:	Bruton 30-03 Pad	North Reference:	True
Well:	Bruton 30-06E	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	26.38	101.30	4,323.4	-328.2	1,642.0	1,674.5	0.00	0.00	0.00
4,800.0	26.38	101.30	4,413.0	-336.9	1,685.6	1,719.0	0.00	0.00	0.00
Williams Fork									
4,870.4	26.38	101.30	4,476.0	-343.1	1,716.3	1,750.2	0.00	0.00	0.00
4,900.0	26.38	101.30	4,502.5	-345.6	1,729.2	1,763.4	0.00	0.00	0.00
5,000.0	26.38	101.30	4,592.1	-354.3	1,772.8	1,807.8	0.00	0.00	0.00
5,100.0	26.38	101.30	4,681.7	-363.1	1,816.3	1,852.3	0.00	0.00	0.00
5,200.0	26.38	101.30	4,771.3	-371.8	1,859.9	1,896.7	0.00	0.00	0.00
Drop 3° / 100'									
5,282.5	26.38	101.30	4,827.3	-377.2	1,887.2	1,924.5	0.00	0.00	0.00
5,300.0	25.26	101.30	4,861.0	-380.4	1,903.2	1,940.8	3.00	-3.00	0.00
5,400.0	22.26	101.30	4,952.6	-388.3	1,942.7	1,981.1	3.00	-3.00	0.00
5,500.0	19.26	101.30	5,046.1	-395.3	1,977.4	2,016.5	3.00	-3.00	0.00
5,600.0	16.26	101.30	5,141.3	-401.2	2,007.3	2,047.0	3.00	-3.00	0.00
5,700.0	13.26	101.30	5,238.0	-406.2	2,032.3	2,072.5	3.00	-3.00	0.00
5,800.0	10.26	101.30	5,335.9	-410.2	2,052.3	2,092.9	3.00	-3.00	0.00
5,900.0	7.26	101.30	5,434.7	-413.2	2,067.2	2,108.1	3.00	-3.00	0.00
6,000.0	4.26	101.30	5,534.2	-415.2	2,077.1	2,118.1	3.00	-3.00	0.00
6,100.0	1.26	101.30	5,634.0	-416.1	2,081.8	2,123.0	3.00	-3.00	0.00
EOD @ Vertical - TOG									
6,142.0	0.00	0.00	5,676.0	-416.2	2,082.2	2,123.4	3.00	-3.00	0.00
6,200.0	0.00	0.00	5,734.0	-416.2	2,082.2	2,123.4	0.00	0.00	0.00
6,300.0	0.00	0.00	5,834.0	-416.2	2,082.2	2,123.4	0.00	0.00	0.00
6,400.0	0.00	0.00	5,934.0	-416.2	2,082.2	2,123.4	0.00	0.00	0.00
6,500.0	0.00	0.00	6,034.0	-416.2	2,082.2	2,123.4	0.00	0.00	0.00
6,600.0	0.00	0.00	6,134.0	-416.2	2,082.2	2,123.4	0.00	0.00	0.00
6,700.0	0.00	0.00	6,234.0	-416.2	2,082.2	2,123.4	0.00	0.00	0.00
6,800.0	0.00	0.00	6,334.0	-416.2	2,082.2	2,123.4	0.00	0.00	0.00
6,900.0	0.00	0.00	6,434.0	-416.2	2,082.2	2,123.4	0.00	0.00	0.00
7,000.0	0.00	0.00	6,534.0	-416.2	2,082.2	2,123.4	0.00	0.00	0.00
7,100.0	0.00	0.00	6,634.0	-416.2	2,082.2	2,123.4	0.00	0.00	0.00
7,200.0	0.00	0.00	6,734.0	-416.2	2,082.2	2,123.4	0.00	0.00	0.00
Cameo									
7,242.0	0.00	0.00	6,776.0	-416.2	2,082.2	2,123.4	0.00	0.00	0.00
7,300.0	0.00	0.00	6,834.0	-416.2	2,082.2	2,123.4	0.00	0.00	0.00
7,400.0	0.00	0.00	6,934.0	-416.2	2,082.2	2,123.4	0.00	0.00	0.00
7,500.0	0.00	0.00	7,034.0	-416.2	2,082.2	2,123.4	0.00	0.00	0.00
7,600.0	0.00	0.00	7,134.0	-416.2	2,082.2	2,123.4	0.00	0.00	0.00
7,700.0	0.00	0.00	7,234.0	-416.2	2,082.2	2,123.4	0.00	0.00	0.00
7,800.0	0.00	0.00	7,334.0	-416.2	2,082.2	2,123.4	0.00	0.00	0.00
7,900.0	0.00	0.00	7,434.0	-416.2	2,082.2	2,123.4	0.00	0.00	0.00
Base Cameo Coal									
7,902.0	0.00	0.00	7,436.0	-416.2	2,082.2	2,123.4	0.00	0.00	0.00
Rollins									
7,942.0	0.00	0.00	7,476.0	-416.2	2,082.2	2,123.4	0.00	0.00	0.00
8,000.0	0.00	0.00	7,534.0	-416.2	2,082.2	2,123.4	0.00	0.00	0.00
8,100.0	0.00	0.00	7,634.0	-416.2	2,082.2	2,123.4	0.00	0.00	0.00
TD @ 8192.0' MD / 7726.0' TVD									
8,192.0	0.00	0.00	7,726.0	-416.2	2,082.2	2,123.4	0.00	0.00	0.00



Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 30-06E
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 30-06E	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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 30-06E - plan hits target center - Circle (radius 50.0)	0.00	0.00	7,726.0	-416.2	2,082.2	1,524,780.74	2,346,792.47	39.251482	-107.806928

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,522.0	1,476.4	8 5/8"	8-5/8	11

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,805.3	2,826.0	G' Sand			
4,870.4	4,476.0	Williams Fork			
6,142.0	5,676.0	TOG			
7,242.0	6,776.0	Cameo			
7,902.0	7,436.0	Base Cameo Coal			
7,942.0	7,476.0	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')
1,379.5	1,348.7	-39.0	195.1	EOB @ 26.38° Inc. / 101.30° Azm
5,262.5	4,827.3	-377.2	1,887.2	Drop 3" / 100'
6,142.0	5,676.0	-416.2	2,082.2	EOD @ Vertical
8,192.0	7,726.0	-416.2	2,082.2	TD @ 8192.0' MD / 7726.0' TVD