



Project: Mesa County, CO
 Site: Curry 0992-18-15 Pad
 Well: Curry SCU 0992-18-09W
 Wellbore: Wellbore #1
 Design: Design #1
 Latitude: 39.266769
 Longitude: -107.707558
 Ground Level: 7780.0
 well @ 7791.0usft (11' RKB)



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 Curry SCU 0992-18-09W, True North
 Vertical (TVD) Reference: well @ 7791.0usft (11' RKB)
 Section (VS) Reference: Slot - (0.0N, 0.0E)
 Measured Depth Reference: well @ 7791.0usft (11' RKB)
 Calculation Method: Minimum Curvature

WELL DETAILS: Curry SCU 0992-18-09W

+N-S	+E-W	Northing	Ground Level: Easting	7780.0 Latitude	Longitude
0.0	0.0	1529647.77	2376258.74	39.266769	-107.707558

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

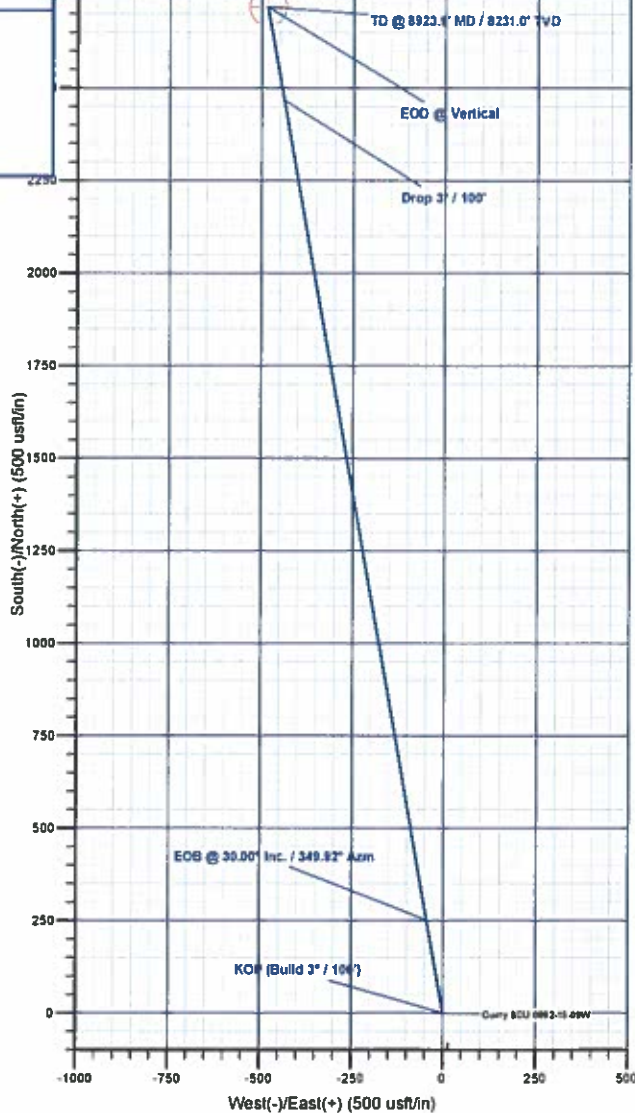
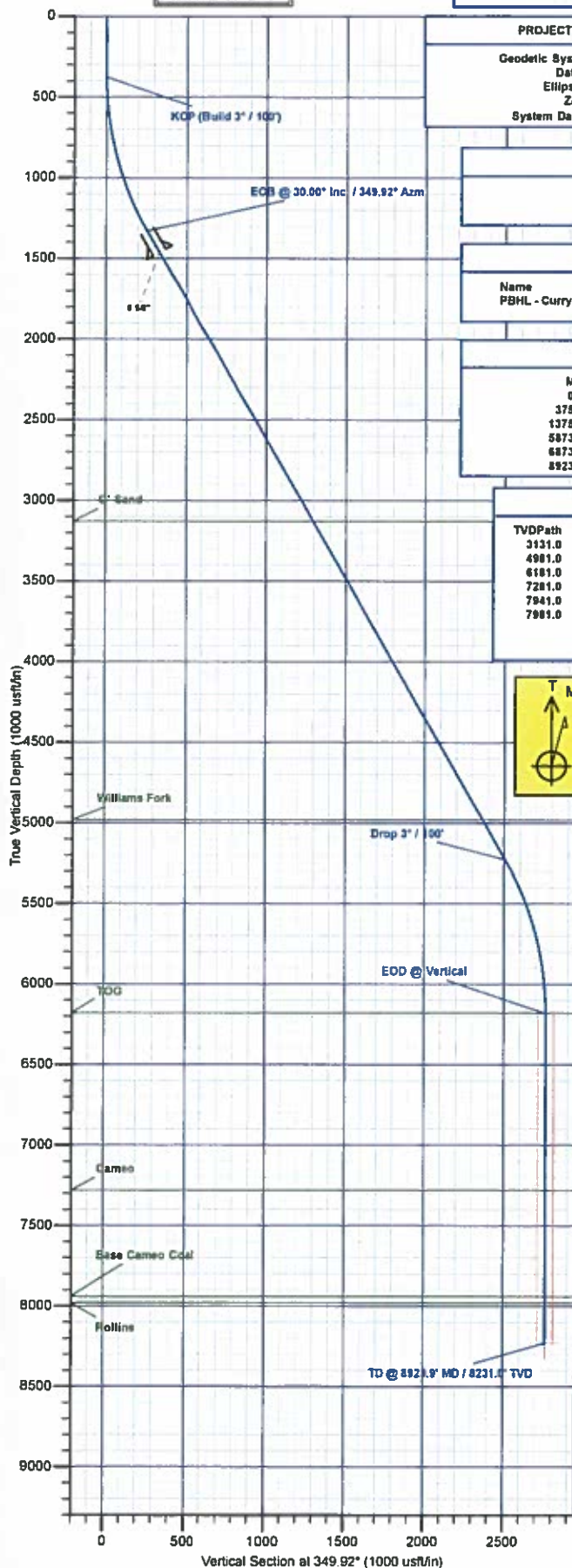
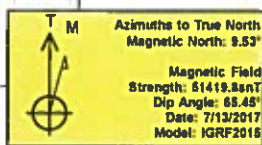
Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
PBHL - Curry SCU 0992-18-09W	8231.0	2718.6	-483.1	1532377.28	2374641.82	39.274233	-107.709265

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	KOP (Build 3° / 100')
375.0	0.00	0.00	375.0	0.0	0.0	0.00	0.00	0.0	EOB @ 30.00° Inc. / 349.92° Azm
1375.0	30.00	349.92	1329.9	251.9	-44.8	3.00	349.92	255.9	Drop 3° / 100'
5873.9	30.00	349.92	5226.1	2466.6	-438.4	0.00	0.00	2505.3	EOD @ Vertical
6873.9	0.00	0.00	6181.0	2718.6	-483.1	3.00	180.00	2761.2	TD @ 8923.9' MD / 8231.0' TVD
8923.9	0.00	0.00	8231.0	2718.6	-483.1	0.00	0.00	2761.2	

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3131.0	3454.7	G' Sand
4981.0	5590.9	Williams Fork
6181.0	6873.9	TOG
7261.0	7973.9	Cameo
7941.0	8633.9	Base Cameo Coal
7981.0	8673.9	Rollins



Plan: Design #1 (Curry SCU 0992-18-09W/Wellbore #1)

Created By: Will Jircik Date: 11:20, July 13 2017



Laramie Energy, LLC

Mesa County, CO

Curry 0992-18-15 Pad

Curry SCU 0992-18-09W

Wellbore #1

Plan: Design #1

QES Well Planning Report

13 July, 2017





Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Curry SCU 0992-18-09W
Company:	Laramie Energy, LLC	TVD Reference:	well @ 7791.0usft (11' RKB)
Project:	Mesa County, CO	MD Reference:	well @ 7791.0usft (11' RKB)
Site:	Curry 0992-18-15 Pad	North Reference:	True
Well:	Curry SCU 0992-18-09W	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		Curry 0992-18-15 Pad			
Site Position:		Northing:	1,529,647.78 usft	Latitude:	39 266769
From:	Lat/Long	Easting:	2,375,058.74 usft	Longitude:	-107.707558
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.39 "

Well	Curry SCU 0992-18-09W					
Well Position	+N/-S	0.0 usft	Northing:	1,529,647.77 usft	Latitude:	39 266769
	+E/-W	0.0 usft	Easting:	2,375,058.74 usft	Longitude:	-107.707558
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	7,780.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2015	7/13/2017	9.53	65.45	51,420

Design	Design #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	349.92

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	
375.0	0.00	0.00	375.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,375.0	30.00	349.92	1,329.9	251.9	-44.8	3.00	3.00	0.00	349.92	
5,873.9	30.00	349.92	5,226.1	2,466.6	-438.4	0.00	0.00	0.00	0.00	
6,873.9	0.00	0.00	6,181.0	2,718.6	-483.1	3.00	-3.00	0.00	180.00	
8,923.9	0.00	0.00	8,231.0	2,718.6	-483.1	0.00	0.00	0.00	0.00	PBHL - Curry SCU 09



Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Curry SCU 0992-18-09W
Company:	Laramie Energy, LLC	TVD Reference:	well @ 7791.0usft (11' RKB)
Project:	Mesa County, CO	MD Reference:	well @ 7791.0usft (11' RKB)
Site:	Curry 0992-18-15 Pad	North Reference:	True
Well:	Curry SCU 0992-18-09W	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
KOP (Build 3° / 100')									
375.0	0.00	0.00	375.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.75	349.92	400.0	0.2	0.0	0.2	3.00	3.00	0.00
500.0	3.75	349.92	499.9	4.0	-0.7	4.1	3.00	3.00	0.00
600.0	6.75	349.92	599.5	13.0	-2.3	13.2	3.00	3.00	0.00
700.0	9.75	349.92	698.4	27.2	-4.8	27.6	3.00	3.00	0.00
800.0	12.75	349.92	796.5	46.4	-8.2	47.1	3.00	3.00	0.00
900.0	15.75	349.92	893.4	70.6	-12.5	71.7	3.00	3.00	0.00
1,000.0	18.75	349.92	988.9	99.8	-17.7	101.4	3.00	3.00	0.00
1,100.0	21.75	349.92	1,082.7	133.9	-23.8	136.0	3.00	3.00	0.00
1,200.0	24.75	349.92	1,174.6	172.7	-30.7	175.4	3.00	3.00	0.00
1,300.0	27.75	349.92	1,264.3	216.3	-38.4	219.7	3.00	3.00	0.00
EOB @ 30.00° Inc. / 349.92° Azm									
1,375.0	30.00	349.92	1,329.9	251.9	-44.8	255.9	3.00	3.00	0.00
1,400.0	30.00	349.92	1,351.6	264.2	-47.0	268.4	0.00	0.00	0.00
1,500.0	30.00	349.92	1,438.2	313.5	-55.7	318.4	0.00	0.00	0.00
8 5/8"									
1,530.0	30.00	349.92	1,464.2	328.2	-58.3	333.4	0.00	0.00	0.00
1,600.0	30.00	349.92	1,524.8	362.7	-64.5	368.4	0.00	0.00	0.00
1,700.0	30.00	349.92	1,611.4	411.9	-73.2	418.4	0.00	0.00	0.00
1,800.0	30.00	349.92	1,698.0	461.1	-82.0	468.4	0.00	0.00	0.00
1,900.0	30.00	349.92	1,784.6	510.4	-90.7	518.4	0.00	0.00	0.00
2,000.0	30.00	349.92	1,871.2	559.6	-99.4	568.4	0.00	0.00	0.00
2,100.0	30.00	349.92	1,957.8	608.8	-108.2	618.4	0.00	0.00	0.00
2,200.0	30.00	349.92	2,044.4	658.1	-116.9	668.4	0.00	0.00	0.00
2,300.0	30.00	349.92	2,131.0	707.3	-125.7	718.4	0.00	0.00	0.00
2,400.0	30.00	349.92	2,217.6	756.5	-134.4	768.4	0.00	0.00	0.00
2,500.0	30.00	349.92	2,304.2	805.7	-143.2	818.4	0.00	0.00	0.00
2,600.0	30.00	349.92	2,390.8	855.0	-151.9	868.4	0.00	0.00	0.00
2,700.0	30.00	349.92	2,477.4	904.2	-160.7	918.4	0.00	0.00	0.00
2,800.0	30.00	349.92	2,564.0	953.4	-169.4	968.4	0.00	0.00	0.00
2,900.0	30.00	349.92	2,650.6	1,002.7	-178.2	1,018.4	0.00	0.00	0.00
3,000.0	30.00	349.92	2,737.2	1,051.9	-186.9	1,068.4	0.00	0.00	0.00
3,100.0	30.00	349.92	2,823.8	1,101.1	-195.7	1,118.4	0.00	0.00	0.00
3,200.0	30.00	349.92	2,910.4	1,150.3	-204.4	1,168.4	0.00	0.00	0.00
3,300.0	30.00	349.92	2,997.0	1,199.6	-213.2	1,218.4	0.00	0.00	0.00
3,400.0	30.00	349.92	3,083.8	1,248.8	-221.9	1,268.4	0.00	0.00	0.00
G' Sand									
3,454.7	30.00	349.92	3,131.0	1,275.7	-226.7	1,295.7	0.00	0.00	0.00
3,500.0	30.00	349.92	3,170.2	1,298.0	-230.7	1,318.4	0.00	0.00	0.00
3,600.0	30.00	349.92	3,256.8	1,347.3	-239.4	1,368.4	0.00	0.00	0.00
3,700.0	30.00	349.92	3,343.4	1,396.5	-248.2	1,418.4	0.00	0.00	0.00
3,800.0	30.00	349.92	3,430.0	1,445.7	-256.9	1,468.4	0.00	0.00	0.00
3,900.0	30.00	349.92	3,516.6	1,494.9	-265.7	1,518.4	0.00	0.00	0.00
4,000.0	30.00	349.92	3,603.3	1,544.2	-274.4	1,568.4	0.00	0.00	0.00
4,100.0	30.00	349.92	3,689.9	1,593.4	-283.2	1,618.4	0.00	0.00	0.00
4,200.0	30.00	349.92	3,776.5	1,642.6	-291.9	1,668.4	0.00	0.00	0.00
4,300.0	30.00	349.92	3,863.1	1,691.9	-300.7	1,718.4	0.00	0.00	0.00
4,400.0	30.00	349.92	3,949.7	1,741.1	-309.4	1,768.4	0.00	0.00	0.00
4,500.0	30.00	349.92	4,036.3	1,790.3	-318.2	1,818.4	0.00	0.00	0.00



Well Planning Report



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Company:	Laramie Energy, LLC	TVD Reference:	well @ 7791.0usft (11' RKB)
Project:	Mesa County, CO	MD Reference:	well @ 7791.0usft (11' RKB)
Site:	Curry 0992-18-15 Pad	North Reference:	True
Well:	Curry SCU 0992-18-09W	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)
4,600.0	30.00	349.92	4,122.9	1,839.5	-326.9	1,868.4	0.00	0.00	0.00
4,700.0	30.00	349.92	4,209.5	1,888.8	-335.7	1,918.4	0.00	0.00	0.00
4,800.0	30.00	349.92	4,296.1	1,938.0	-344.4	1,968.4	0.00	0.00	0.00
4,900.0	30.00	349.92	4,382.7	1,987.2	-353.2	2,018.4	0.00	0.00	0.00
5,000.0	30.00	349.92	4,469.3	2,036.5	-361.9	2,068.4	0.00	0.00	0.00
5,100.0	30.00	349.92	4,555.9	2,085.7	-370.6	2,118.4	0.00	0.00	0.00
5,200.0	30.00	349.92	4,642.5	2,134.9	-379.4	2,168.4	0.00	0.00	0.00
5,300.0	30.00	349.92	4,729.1	2,184.1	-388.1	2,218.4	0.00	0.00	0.00
5,400.0	30.00	349.92	4,815.7	2,233.4	-396.9	2,268.4	0.00	0.00	0.00
5,500.0	30.00	349.92	4,902.3	2,282.6	-405.6	2,318.4	0.00	0.00	0.00
Williams Fork									
5,590.9	30.00	349.92	4,981.0	2,327.3	-413.6	2,363.8	0.00	0.00	0.00
5,600.0	30.00	349.92	4,988.9	2,331.8	-414.4	2,368.4	0.00	0.00	0.00
5,700.0	30.00	349.92	5,075.5	2,381.1	-423.1	2,418.4	0.00	0.00	0.00
5,800.0	30.00	349.92	5,162.1	2,430.3	-431.9	2,468.4	0.00	0.00	0.00
Drop 3° / 100'									
5,873.9	30.00	349.92	5,226.1	2,466.6	-438.4	2,505.3	0.00	0.00	0.00
5,900.0	29.22	349.92	5,248.8	2,479.4	-440.6	2,518.2	3.00	-3.00	0.00
6,000.0	26.22	349.92	5,337.3	2,525.1	-448.7	2,564.7	3.00	-3.00	0.00
6,100.0	23.22	349.92	5,428.1	2,566.3	-456.1	2,606.5	3.00	-3.00	0.00
6,200.0	20.22	349.92	5,521.0	2,602.7	-462.5	2,643.5	3.00	-3.00	0.00
6,300.0	17.22	349.92	5,615.7	2,634.3	-468.1	2,675.6	3.00	-3.00	0.00
6,400.0	14.22	349.92	5,712.0	2,661.0	-472.9	2,702.7	3.00	-3.00	0.00
6,500.0	11.22	349.92	5,809.5	2,682.7	-476.7	2,724.7	3.00	-3.00	0.00
6,600.0	8.22	349.92	5,908.1	2,699.3	-479.7	2,741.6	3.00	-3.00	0.00
6,700.0	5.22	349.92	6,007.4	2,710.8	-481.7	2,753.3	3.00	-3.00	0.00
6,800.0	2.22	349.92	6,107.2	2,717.2	-482.9	2,759.7	3.00	-3.00	0.00
EOD @ Vertical - TOG									
6,873.9	0.00	0.00	6,181.0	2,718.6	-483.1	2,761.2	3.00	-3.00	0.00
6,900.0	0.00	0.00	6,207.1	2,718.6	-483.1	2,761.2	0.00	0.00	0.00
7,000.0	0.00	0.00	6,307.1	2,718.6	-483.1	2,761.2	0.00	0.00	0.00
7,100.0	0.00	0.00	6,407.1	2,718.6	-483.1	2,761.2	0.00	0.00	0.00
7,200.0	0.00	0.00	6,507.1	2,718.6	-483.1	2,761.2	0.00	0.00	0.00
7,300.0	0.00	0.00	6,607.1	2,718.6	-483.1	2,761.2	0.00	0.00	0.00
7,400.0	0.00	0.00	6,707.1	2,718.6	-483.1	2,761.2	0.00	0.00	0.00
7,500.0	0.00	0.00	6,807.1	2,718.6	-483.1	2,761.2	0.00	0.00	0.00
7,600.0	0.00	0.00	6,907.1	2,718.6	-483.1	2,761.2	0.00	0.00	0.00
7,700.0	0.00	0.00	7,007.1	2,718.6	-483.1	2,761.2	0.00	0.00	0.00
7,800.0	0.00	0.00	7,107.1	2,718.6	-483.1	2,761.2	0.00	0.00	0.00
7,900.0	0.00	0.00	7,207.1	2,718.6	-483.1	2,761.2	0.00	0.00	0.00
Cameo									
7,973.9	0.00	0.00	7,281.0	2,718.6	-483.1	2,761.2	0.00	0.00	0.00
8,000.0	0.00	0.00	7,307.1	2,718.6	-483.1	2,761.2	0.00	0.00	0.00
8,100.0	0.00	0.00	7,407.1	2,718.6	-483.1	2,761.2	0.00	0.00	0.00
8,200.0	0.00	0.00	7,507.1	2,718.6	-483.1	2,761.2	0.00	0.00	0.00
8,300.0	0.00	0.00	7,607.1	2,718.6	-483.1	2,761.2	0.00	0.00	0.00
8,400.0	0.00	0.00	7,707.1	2,718.6	-483.1	2,761.2	0.00	0.00	0.00
8,500.0	0.00	0.00	7,807.1	2,718.6	-483.1	2,761.2	0.00	0.00	0.00
8,600.0	0.00	0.00	7,907.1	2,718.6	-483.1	2,761.2	0.00	0.00	0.00
Base Cameo Coal									
8,633.9	0.00	0.00	7,941.0	2,718.6	-483.1	2,761.2	0.00	0.00	0.00
Rollins									
8,673.9	0.00	0.00	7,981.0	2,718.6	-483.1	2,761.2	0.00	0.00	0.00



Well Planning Report



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Company:	Laramie Energy, LLC	TVD Reference:	well @ 7791.0usft (11' RKB)
Project:	Mesa County, CO	MD Reference:	well @ 7791.0usft (11' RKB)
Site:	Curry 0992-18-15 Pad	North Reference:	True
Well:	Curry SCU 0992-18-09W	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)
8,700.0	0.00	0.00	8,007.1	2,718.6	-483.1	2,761.2	0.00	0.00	0.00
8,800.0	0.00	0.00	8,107.1	2,718.6	-483.1	2,761.2	0.00	0.00	0.00
8,900.0	0.00	0.00	8,207.1	2,718.6	-483.1	2,761.2	0.00	0.00	0.00
TD @ 8923.9' MD / 8231.0' TVD - PBHL - Curry SCU 0992-18-09W									
8,923.9	0.00	0.00	8,231.0	2,718.6	-483.1	2,761.2	0.00	0.00	0.00

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL - Curry SCU 0992	0.00	0.00	8,231.0	2,718.6	-483.1	1,532,377.28	2,374,641.62	39.274233	-107.709265
- plan hits target center									
- Circle (radius 50.0)									

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,530.0	1,464.2	8 5/8"	8-5/8	11

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,454.7	3,131.0	G' Sand			
5,590.9	4,981.0	Williams Fork			
6,873.9	6,181.0	TOG			
7,973.9	7,281.0	Cameo			
8,633.9	7,941.0	Base Cameo Coal			
8,673.9	7,981.0	Rollins			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
375.0	375.0	0.0	0.0	KOP (Build 3" / 100')
1,375.0	1,329.9	251.9	-44.8	EOB @ 30.00° Inc. / 349.92° Azm
5,873.9	5,226.1	2,466.6	-438.4	Drop 3" / 100'
6,873.9	6,181.0	2,718.6	-483.1	EOD @ Vertical
8,923.9	8,231.0	2,718.6	-483.1	TD @ 8923.9' MD / 8231.0' TVD