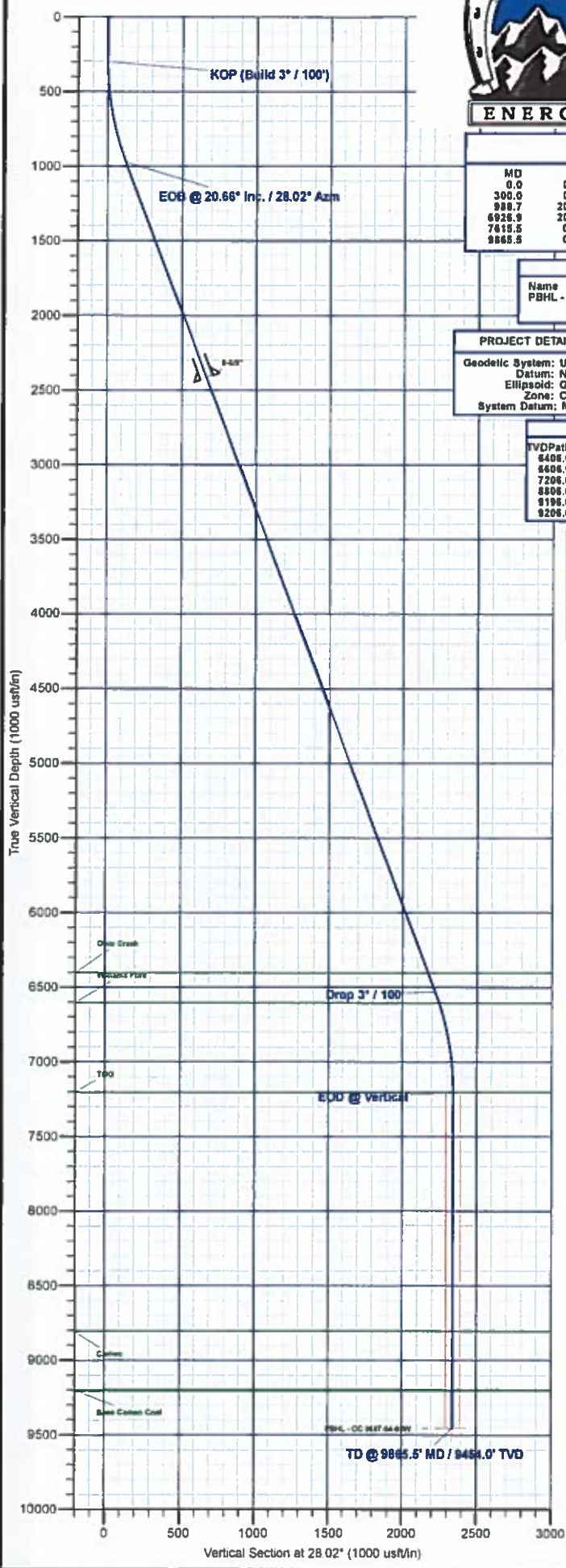




Project: Garfield County, CO
 Site: CC 604-12-13 Pad
 Well: CC 0697-04-06W
 Wellbore: A-6
 Design: Design #1
 Latitude: 39.553287
 Longitude: -108.233383
 Ground Level: 8529.0
 WELL @ 8559.0usft (H&P #522)



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	KOP (Build 3° / 100')	
306.0	0.00	0.00	306.0	0.0	0.0	0.00	0.00	0.0	EOB @ 20.66° Inc. / 28.02° Azm	
988.7	20.66	28.02	973.8	108.4	87.7	3.00	28.02	122.8	Drop 3° / 100'	
6928.9	20.66	28.02	6530.2	1958.0	1041.9	0.00	0.00	2217.9	EOD @ Vertical	
7615.5	0.00	0.00	7204.0	2066.4	1099.6	3.00	180.00	2340.8	TD @ 9865.5' MD / 9454.0' TVD	
9865.5	0.00	0.00	9454.0	2066.4	1099.6	0.00	0.00	2340.8		

DESIGN TARGET DETAILS							
Name	PBHL - CC 0697-04-06W	TVD	9454.0	+N-S	2066.4	+E-W	1099.6
				Northing	1640039.65	Easting	2230543.41
				Latitude	39.553287	Longitude	-108.233383

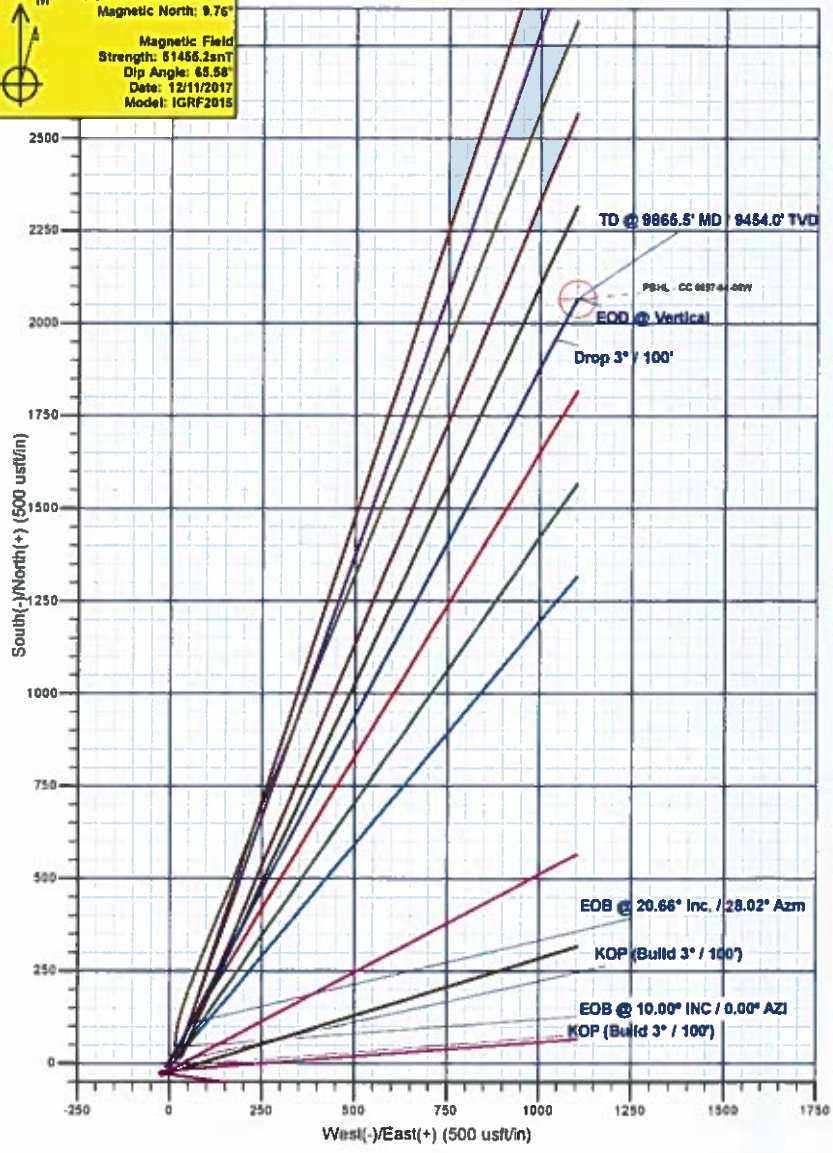
PROJECT DETAILS: Garfield County, CO
 Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Colorado Central Zone
 System Datum: Mean Sea Level

WELL DETAILS: CC 0697-04-06W					
			8529.0		
+N-S	0.0	+E-W	0.0	Northing	1638007.26
				Easting	2229382.14
				Latitude	39.553287
				Longitude	-108.233383

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
8406.0	8794.2	Ohio Creek
8406.0	7007.3	Williams Fork
7206.0	7617.5	TOG
8806.0	9217.5	Cameo
9196.0	9607.5	Base Cameo Coal
9206.0	9617.5	Rollins

REFERENCE INFORMATION
 Co-ordinate (NE) Reference: Well CC 0697-04-06W, True North
 Vertical (TVD) Reference: WELL @ 8559.0usft (H&P #522)
 Section (VS) Reference: Slot - (0.0N, 0.0E)
 Measured Depth Reference: WELL @ 8559.0usft (H&P #522)
 Calculation Method: Minimum Curvature

Compass Rose: Azimuths to True North, Magnetic North: 9.76°
 Magnetic Field Strength: 51456.2nT
 Dip Angle: 65.58°
 Date: 12/11/2017
 Model: IGRF2015





Laramie Energy, LLC

Garfield County, CO

CC 604-12-13 Pad

CC 0697-04-06W

A-6

Plan: Design #1

QES Well Planning Report

12 December, 2017





Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CC 0697-04-06W
Company:	Laramie Energy, LLC	TVD Reference:	WELL @ 8559.0usft (H&P #522)
Project:	Garfield County, CO	MD Reference:	WELL @ 8559.0usft (H&P #522)
Site:	CC 604-12-13 Pad	North Reference:	True
Well:	CC 0697-04-06W	Survey Calculation Method:	Minimum Curvature
Wellbore:	A-6		
Design:	Design #1		

Project	Garfield 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	CC 604-12-13 Pad			
Site Position:		Northing:	1,638,031.56 usft	Latitude: 39 553356
From:	Lat/Long	Easting:	2,229,410.52 usft	Longitude: -108 233285
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence: -1.72 "

Well	CC 0697-04-06W			
Well Position	+N/-S	-25.1 usft	Northing:	1,638,007.25 usft
	+E/-W	-27.6 usft	Easting:	2,229,382.14 usft
Position Uncertainty		0.0 usft	Wellhead Elevation:	Ground Level: 8,529.0 usft

Wellbore	A-6				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	12/11/2017	9.76	65.58	51,455.21750372

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	28.02

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	
300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.00	0.00	
988.7	20.66	28.02	973.8	108.4	57.7	3.00	3.00	0.00	28.02	
6,926.9	20.66	28.02	6,530.2	1,958.0	1,041.9	0.00	0.00	0.00	0.00	
7,815.5	0.00	0.00	7,204.0	2,066.4	1,099.6	3.00	-3.00	0.00	180.00	
9,865.5	0.00	0.00	9,454.0	2,066.4	1,099.6	0.00	0.00	0.00	0.00	PBHL - CC 0697-04-C



Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CC 0697-04-06W
Company:	Laramie Energy, LLC	TVD Reference:	WELL @ 8559.0usft (H&P #522)
Project:	Garfield County, CO	MD Reference:	WELL @ 8559.0usft (H&P #522)
Site:	CC 604-12-13 Pad	North Reference:	True
Well:	CC 0697-04-06W	Survey Calculation Method:	Minimum Curvature
Wellbore:	A-6		
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
KOP (Build 3° / 100')									
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	3.00	28.02	400.0	2.3	1.2	2.6	3.00	3.00	0.00
500.0	6.00	28.02	499.6	9.2	4.9	10.5	3.00	3.00	0.00
600.0	9.00	28.02	598.8	20.8	11.0	23.5	3.00	3.00	0.00
700.0	12.00	28.02	697.1	36.8	19.6	41.7	3.00	3.00	0.00
800.0	15.00	28.02	794.3	57.4	30.6	65.1	3.00	3.00	0.00
900.0	18.00	28.02	890.2	82.5	43.9	93.5	3.00	3.00	0.00
EOB @ 28.66° Inc. / 28.02° Azm									
988.7	20.66	28.02	973.8	108.4	57.7	122.8	3.00	3.00	0.00
1,000.0	20.66	28.02	984.4	112.0	59.6	126.8	0.00	0.00	0.00
1,100.0	20.66	28.02	1,078.0	143.1	76.1	162.1	0.00	0.00	0.00
1,200.0	20.66	28.02	1,171.6	174.2	92.7	197.4	0.00	0.00	0.00
1,300.0	20.66	28.02	1,265.2	205.4	109.3	232.7	0.00	0.00	0.00
1,400.0	20.66	28.02	1,358.7	236.5	125.9	267.9	0.00	0.00	0.00
1,500.0	20.66	28.02	1,452.3	267.7	142.4	303.2	0.00	0.00	0.00
1,600.0	20.66	28.02	1,545.9	298.8	159.0	338.5	0.00	0.00	0.00
1,700.0	20.66	28.02	1,639.4	330.0	175.6	373.8	0.00	0.00	0.00
1,800.0	20.66	28.02	1,733.0	361.1	192.2	409.1	0.00	0.00	0.00
1,900.0	20.66	28.02	1,826.6	392.3	208.7	444.4	0.00	0.00	0.00
2,000.0	20.66	28.02	1,920.1	423.4	225.3	479.6	0.00	0.00	0.00
2,100.0	20.66	28.02	2,013.7	454.6	241.9	514.9	0.00	0.00	0.00
2,200.0	20.66	28.02	2,107.3	485.7	258.5	550.2	0.00	0.00	0.00
2,300.0	20.66	28.02	2,200.8	516.9	275.0	585.5	0.00	0.00	0.00
2,400.0	20.66	28.02	2,294.4	548.0	291.6	620.8	0.00	0.00	0.00
2,500.0	20.66	28.02	2,388.0	579.2	308.2	656.1	0.00	0.00	0.00
9-5/8"									
2,530.0	20.66	28.02	2,416.1	588.5	313.2	668.6	0.00	0.00	0.00
2,600.0	20.66	28.02	2,481.6	610.3	324.8	691.3	0.00	0.00	0.00
2,700.0	20.66	28.02	2,575.1	641.5	341.3	726.6	0.00	0.00	0.00
2,800.0	20.66	28.02	2,668.7	672.6	357.9	761.9	0.00	0.00	0.00
2,900.0	20.66	28.02	2,762.3	703.7	374.5	797.2	0.00	0.00	0.00
3,000.0	20.66	28.02	2,855.8	734.9	391.1	832.5	0.00	0.00	0.00
3,100.0	20.66	28.02	2,949.4	766.0	407.6	867.7	0.00	0.00	0.00
3,200.0	20.66	28.02	3,043.0	797.2	424.2	903.0	0.00	0.00	0.00
3,300.0	20.66	28.02	3,136.5	828.3	440.8	938.3	0.00	0.00	0.00
3,400.0	20.66	28.02	3,230.1	859.5	457.4	973.6	0.00	0.00	0.00
3,500.0	20.66	28.02	3,323.7	890.6	473.9	1,008.9	0.00	0.00	0.00
3,600.0	20.66	28.02	3,417.2	921.8	490.5	1,044.2	0.00	0.00	0.00
3,700.0	20.66	28.02	3,510.8	952.9	507.1	1,079.4	0.00	0.00	0.00
3,800.0	20.66	28.02	3,604.4	984.1	523.7	1,114.7	0.00	0.00	0.00
3,900.0	20.66	28.02	3,697.9	1,015.2	540.2	1,150.0	0.00	0.00	0.00
4,000.0	20.66	28.02	3,791.5	1,046.4	556.8	1,185.3	0.00	0.00	0.00
4,100.0	20.66	28.02	3,885.1	1,077.5	573.4	1,220.6	0.00	0.00	0.00
4,200.0	20.66	28.02	3,978.7	1,108.7	589.9	1,255.8	0.00	0.00	0.00
4,300.0	20.66	28.02	4,072.2	1,139.8	606.5	1,291.1	0.00	0.00	0.00
4,400.0	20.66	28.02	4,165.8	1,170.9	623.1	1,326.4	0.00	0.00	0.00
4,500.0	20.66	28.02	4,259.4	1,202.1	639.7	1,361.7	0.00	0.00	0.00
4,600.0	20.66	28.02	4,352.9	1,233.2	656.2	1,397.0	0.00	0.00	0.00
4,700.0	20.66	28.02	4,446.5	1,264.4	672.8	1,432.3	0.00	0.00	0.00



Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CC 0697-04-06W
Company:	Laramie Energy, LLC	TVD Reference:	WELL @ 8559.0usft (H&P #522)
Project:	Garfield County, CO	MD Reference:	WELL @ 8559.0usft (H&P #522)
Site:	CC 604-12-13 Pad	North Reference:	True
Well:	CC 0697-04-06W	Survey Calculation Method:	Minimum Curvature
Wellbore:	A-6		
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)
4,800.0	20.66	28.02	4,540.1	1,295.5	689.4	1,467.5	0.00	0.00	0.00
4,900.0	20.66	28.02	4,633.6	1,326.7	706.0	1,502.8	0.00	0.00	0.00
5,000.0	20.66	28.02	4,727.2	1,357.8	722.5	1,538.1	0.00	0.00	0.00
5,100.0	20.66	28.02	4,820.8	1,389.0	739.1	1,573.4	0.00	0.00	0.00
5,200.0	20.66	28.02	4,914.3	1,420.1	755.7	1,608.7	0.00	0.00	0.00
5,300.0	20.66	28.02	5,007.9	1,451.3	772.3	1,643.9	0.00	0.00	0.00
5,400.0	20.66	28.02	5,101.5	1,482.4	788.8	1,679.2	0.00	0.00	0.00
5,500.0	20.66	28.02	5,195.1	1,513.6	805.4	1,714.5	0.00	0.00	0.00
5,600.0	20.66	28.02	5,288.6	1,544.7	822.0	1,749.8	0.00	0.00	0.00
5,700.0	20.66	28.02	5,382.2	1,575.9	838.6	1,785.1	0.00	0.00	0.00
5,800.0	20.66	28.02	5,475.8	1,607.0	855.1	1,820.4	0.00	0.00	0.00
5,900.0	20.66	28.02	5,569.3	1,638.1	871.7	1,855.6	0.00	0.00	0.00
6,000.0	20.66	28.02	5,662.9	1,669.3	888.3	1,890.9	0.00	0.00	0.00
6,100.0	20.66	28.02	5,756.5	1,700.4	904.9	1,926.2	0.00	0.00	0.00
6,200.0	20.66	28.02	5,850.0	1,731.6	921.4	1,961.5	0.00	0.00	0.00
6,300.0	20.66	28.02	5,943.6	1,762.7	938.0	1,996.8	0.00	0.00	0.00
6,400.0	20.66	28.02	6,037.2	1,793.9	954.6	2,032.0	0.00	0.00	0.00
6,500.0	20.66	28.02	6,130.7	1,825.0	971.2	2,067.3	0.00	0.00	0.00
6,600.0	20.66	28.02	6,224.3	1,856.2	987.7	2,102.6	0.00	0.00	0.00
6,700.0	20.66	28.02	6,317.9	1,887.3	1,004.3	2,137.9	0.00	0.00	0.00
Ohio Creek									
6,794.2	20.66	28.02	6,406.0	1,916.6	1,019.9	2,171.1	0.00	0.00	0.00
6,800.0	20.66	28.02	6,411.5	1,918.5	1,020.9	2,173.2	0.00	0.00	0.00
6,900.0	20.66	28.02	6,505.0	1,949.6	1,037.4	2,208.5	0.00	0.00	0.00
Drop 3° / 100'									
6,926.9	20.66	28.02	6,530.2	1,958.0	1,041.9	2,217.9	0.00	0.00	0.00
7,000.0	18.47	28.02	6,599.1	1,979.6	1,053.4	2,242.4	3.00	-3.00	0.00
Williams Fork									
7,007.3	18.25	28.02	6,606.0	1,981.6	1,054.5	2,244.7	3.00	-3.00	0.00
7,100.0	15.47	28.02	6,694.7	2,005.4	1,067.1	2,271.6	3.00	-3.00	0.00
7,200.0	12.47	28.02	6,791.7	2,026.7	1,078.4	2,295.7	3.00	-3.00	0.00
7,300.0	9.47	28.02	6,889.9	2,043.4	1,087.4	2,314.8	3.00	-3.00	0.00
7,400.0	6.47	28.02	6,988.9	2,055.7	1,093.9	2,328.6	3.00	-3.00	0.00
7,500.0	3.47	28.02	7,088.5	2,063.3	1,098.0	2,337.3	3.00	-3.00	0.00
7,600.0	0.47	28.02	7,188.5	2,066.4	1,099.6	2,340.7	3.00	-3.00	0.00
EOD @ Vertical									
7,615.5	0.00	0.00	7,204.0	2,066.4	1,099.6	2,340.8	3.00	-3.00	-180.41
TOG									
7,617.5	0.00	0.00	7,206.0	2,066.4	1,099.6	2,340.8	0.00	0.00	0.00
7,700.0	0.00	0.00	7,288.5	2,066.4	1,099.6	2,340.8	0.00	0.00	0.00
7,800.0	0.00	0.00	7,388.5	2,066.4	1,099.6	2,340.8	0.00	0.00	0.00
7,900.0	0.00	0.00	7,488.5	2,066.4	1,099.6	2,340.8	0.00	0.00	0.00
8,000.0	0.00	0.00	7,588.5	2,066.4	1,099.6	2,340.8	0.00	0.00	0.00
8,100.0	0.00	0.00	7,688.5	2,066.4	1,099.6	2,340.8	0.00	0.00	0.00
8,200.0	0.00	0.00	7,788.5	2,066.4	1,099.6	2,340.8	0.00	0.00	0.00
8,300.0	0.00	0.00	7,888.5	2,066.4	1,099.6	2,340.8	0.00	0.00	0.00
8,400.0	0.00	0.00	7,988.5	2,066.4	1,099.6	2,340.8	0.00	0.00	0.00
8,500.0	0.00	0.00	8,088.5	2,066.4	1,099.6	2,340.8	0.00	0.00	0.00
8,600.0	0.00	0.00	8,188.5	2,066.4	1,099.6	2,340.8	0.00	0.00	0.00
8,700.0	0.00	0.00	8,288.5	2,066.4	1,099.6	2,340.8	0.00	0.00	0.00
8,800.0	0.00	0.00	8,388.5	2,066.4	1,099.6	2,340.8	0.00	0.00	0.00
8,900.0	0.00	0.00	8,488.5	2,066.4	1,099.6	2,340.8	0.00	0.00	0.00
9,000.0	0.00	0.00	8,588.5	2,066.4	1,099.6	2,340.8	0.00	0.00	0.00
9,100.0	0.00	0.00	8,688.5	2,066.4	1,099.6	2,340.8	0.00	0.00	0.00



Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CC 0697-04-06W
Company:	Laramie Energy, LLC	TVD Reference:	WELL @ 8559.0usft (H&P #522)
Project:	Garfield County, CO	MD Reference:	WELL @ 8559.0usft (H&P #522)
Site:	CC 604-12-13 Pad	North Reference:	True
Well:	CC 0697-04-06W	Survey Calculation Method:	Minimum Curvature
Wellbore:	A-8		
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)
9,200.0	0.00	0.00	8,788.5	2,066.4	1,099.6	2,340.8	0.00	0.00	0.00
Cameo									
9,217.5	0.00	0.00	8,806.0	2,066.4	1,099.6	2,340.8	0.00	0.00	0.00
9,300.0	0.00	0.00	8,888.5	2,066.4	1,099.6	2,340.8	0.00	0.00	0.00
9,400.0	0.00	0.00	8,988.5	2,066.4	1,099.6	2,340.8	0.00	0.00	0.00
9,500.0	0.00	0.00	9,088.5	2,066.4	1,099.6	2,340.8	0.00	0.00	0.00
9,600.0	0.00	0.00	9,188.5	2,066.4	1,099.6	2,340.8	0.00	0.00	0.00
Base Cameo Coal									
9,607.5	0.00	0.00	9,196.0	2,066.4	1,099.6	2,340.8	0.00	0.00	0.00
Rollins									
9,617.5	0.00	0.00	9,206.0	2,066.4	1,099.6	2,340.8	0.00	0.00	0.00
9,700.0	0.00	0.00	9,288.5	2,066.4	1,099.6	2,340.8	0.00	0.00	0.00
9,800.0	0.00	0.00	9,388.5	2,066.4	1,099.6	2,340.8	0.00	0.00	0.00
TD @ 9865.5' MD / 9454.0' TVD									
9,865.5	0.00	0.00	9,454.0	2,066.4	1,099.6	2,340.8	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 - CC 0697-04-06V	0.00	0.00	9,454.0	2,066.4	1,099.6	1,640,039.64	2,230,543.41	39.558960	-108.229483
- plan hits target center									
- Circle (radius 50.0)									

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
2,530.0	2,416.1	9-5/8"	9-5/8	14-3/4

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,794.2	6,406.0	Ohio Creek			
7,007.3	6,606.0	Williams Fork			
7,617.5	7,206.0	TOG			
9,217.5	8,806.0	Cameo			
9,607.5	9,196.0	Base Cameo Coal			
9,617.5	9,206.0	Rollins			



Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CC 0897-04-06W
Company:	Laramie Energy, LLC	TVD Reference:	WELL @ 8559 0usft (H&P #522)
Project:	Garfield County, CO	MD Reference:	WELL @ 8559 0usft (H&P #522)
Site:	CC 604-12-13 Pad	North Reference:	True
Well:	CC 0697-04-06W	Survey Calculation Method:	Minimum Curvature
Wellbore:	A-6		
Design:	Design #1		

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
300.0	300.0	0.0	0.0	KOP (Build 3" / 100')
988.7	973.8	108.4	57.7	EOB @ 20.66° Inc. / 28.02° Azm
6,926.9	6,530.2	1,958.0	1,041.9	Drop 3" / 100'
7,615.5	7,204.0	2,066.4	1,099.6	EOD @ Vertical
9,865.5	9,454.0	2,066.4	1,099.6	TD @ 9865.5' MD / 9454.0' TVD