

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 0697-03-17W

+N/-S 0.0 +E/-W 0.0 Northing 1639645.26 Easting 2237388.67 Latitude 39.558220 Longitude -108.205164

Project: Garfield County, CO
Site: CC 0697-03-07 Pad
Well: CC 0697-03-17W
Wellbore: Wellbore #1
Design: Design #5
Latitude: 39.558220
Longitude: -108.205164
Ground Level: 8428.0
well @ 8458.0usft (30' RKB)



REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well CC 0697-03-17W, True North
Vertical (TVD) Reference: well @ 8458.0usft (30' RKB)
Section (VS) Reference: Slot - (0.0N, 0.0E)
Measured Depth Reference: well @ 8458.0usft (30' RKB)
Calculation Method: Minimum Curvature

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
835.0	847.3	Mahogany
2903.0	2963.8	Wasatch
4593.0	4870.0	Wasatch 'G' Sand
4803.0	5094.8	Fort Union
6137.0	6522.6	Ohio Creek
6626.0	6936.1	Williams Fork
7251.0	7682.6	TOG
8775.0	9206.6	Cameo
9142.0	9573.6	Base Cameo Coal
9183.0	9619.6	Rollins
9409.6	9991.6	Cozzetta

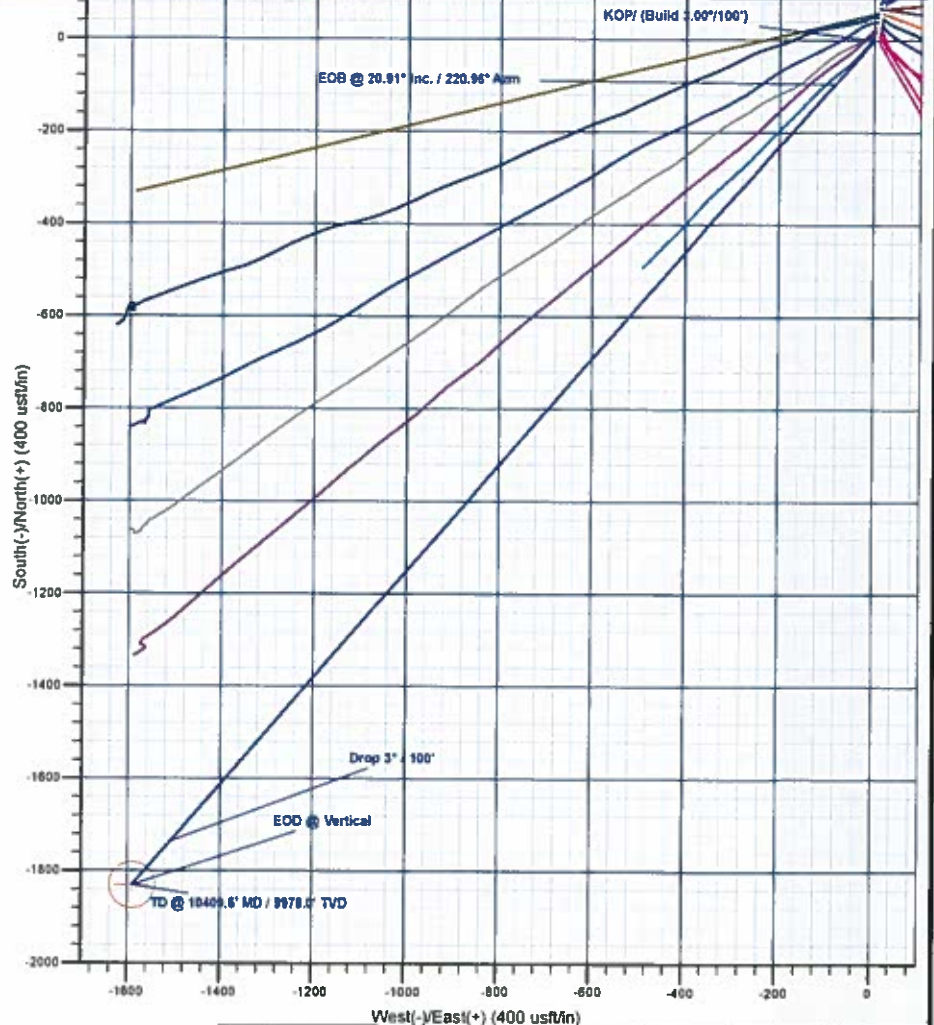
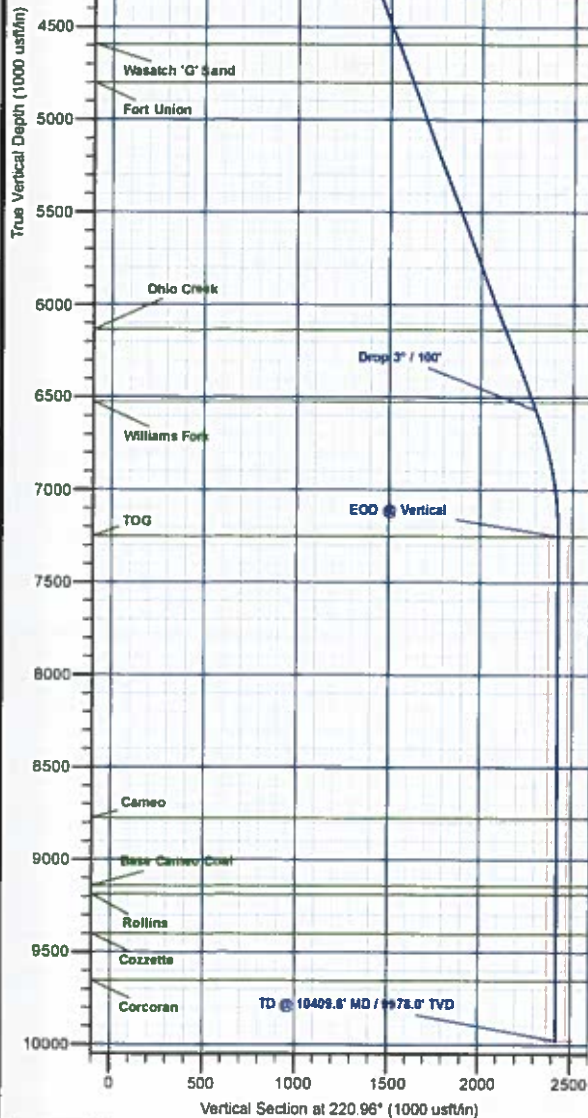


DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL D44 - CC 0697-03-17W	9978.0	-1830.7	-1589.3	1637782.64	2238745.74	39.553194	-108.210801

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 3.00°/100')
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	EOB @ 20.91° Inc / 220.96° Azm
896.9	20.91	220.96	881.6	-95.0	-42.4	3.00	220.96	125.8	Drop 3° / 100'
8985.7	20.91	220.96	8569.4	-1735.8	-1596.9	0.00	0.00	2288.6	EOB @ Vertical
7682.6	0.00	0.00	7251.0	-1830.7	-1589.3	3.00	180.00	2424.4	TD @ 10409.6' MD / 9978.0' TVD
10409.6	0.00	0.00	9978.0	-1830.7	-1589.3	0.00	0.00	2424.4	



Plan: Design #5 (CC 0697-03-17W/Wellbore #1)

Created By: Will Jircik Date: 17:51, July 23 2018



Laramie Energy, LLC

Garfield County, CO

CC 0697-03-07 Pad

CC 0697-03-17W

Wellbore #1

Plan: Design #5

QES Well Planning Report

23 July, 2018





Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CC 0697-03-17W
Company:	Laramie Energy, LLC	TVD Reference:	well @ 8458.0usft (30' RKB)
Project:	Garfield County, CO	MD Reference:	well @ 8458.0usft (30' RKB)
Site:	CC 0697-03-07 Pad	North Reference:	True
Well:	CC 0697-03-17W	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #5		

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 0697-03-07 Pad		
Site Position:		Northing:	1,638,132.66 usft
From:	Lat/Long	Easting:	2,236,874.96 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	39.554247
		Longitude:	-108.206835
		Grid Convergence:	-1.71 °

Well	CC 0697-03-17W		
Well Position	+N/-S	1,447.3 usft	Northing: 1,639,565.25 usft
	+E/-W	471.0 usft	Easting: 2,237,388.87 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	Latitude: 39.558220
			Longitude: -108.205165
			Ground Level: 8,428.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	8/30/2017	9.78	65.60	51,493.66693707

Design	Design #5			
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	220.96

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	
896.9	20.91	220.96	881.6	-95.0	-82.4	3.00	3.00	0.00	220.96	
6,985.7	20.91	220.96	6,569.4	-1,735.8	-1,506.9	0.00	0.00	0.00	0.00	
7,682.6	0.00	0.00	7,251.0	-1,830.7	-1,589.3	3.00	-3.00	0.00	180.00	
10,409.6	0.00	0.00	9,978.0	-1,830.7	-1,589.3	0.00	0.00	0.00	0.00	PBHL D#4 - CC 06:



Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CC 0697-03-17W
Company:	Laramie Energy, LLC	TVD Reference:	well @ 8458.0usft (30' RKB)
Project:	Garfield County, CO	MD Reference:	well @ 8458.0usft (30' RKB)
Site:	CC 0697-03-07 Pad	North Reference:	True
Well:	CC 0697-03-17W	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #5		

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 3.00°/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	220.96	300.0	-2.0	-1.7	2.6	3.00	3.00	0.00
400.0	6.00	220.96	399.6	-7.9	-6.9	10.5	3.00	3.00	0.00
500.0	9.00	220.96	498.8	-17.8	-15.4	23.5	3.00	3.00	0.00
600.0	12.00	220.96	597.1	-31.5	-27.4	41.7	3.00	3.00	0.00
700.0	15.00	220.96	694.3	-49.1	-42.7	65.1	3.00	3.00	0.00
800.0	18.00	220.96	790.2	-70.6	-61.3	93.5	3.00	3.00	0.00
Mahogany									
847.3	19.42	220.96	835.0	-82.0	-71.2	108.7	3.00	3.00	0.00
EOB @ 20.91° Inc. / 220.96° Azm									
896.9	20.91	220.96	881.6	-95.0	-82.4	125.8	3.00	3.00	0.00
900.0	20.91	220.96	884.4	-95.8	-83.2	126.8	0.00	0.00	0.00
1,000.0	20.91	220.96	977.8	-122.7	-106.6	162.5	0.00	0.00	0.00
1,100.0	20.91	220.96	1,071.3	-149.7	-129.9	198.2	0.00	0.00	0.00
1,200.0	20.91	220.96	1,164.7	-176.6	-153.3	233.9	0.00	0.00	0.00
1,300.0	20.91	220.96	1,258.1	-203.6	-176.7	269.6	0.00	0.00	0.00
1,400.0	20.91	220.96	1,351.5	-230.5	-200.1	305.3	0.00	0.00	0.00
1,500.0	20.91	220.96	1,444.9	-257.5	-223.5	341.0	0.00	0.00	0.00
1,600.0	20.91	220.96	1,538.3	-284.4	-246.9	376.7	0.00	0.00	0.00
1,700.0	20.91	220.96	1,631.8	-311.4	-270.3	412.3	0.00	0.00	0.00
1,800.0	20.91	220.96	1,725.2	-338.3	-293.7	448.0	0.00	0.00	0.00
1,900.0	20.91	220.96	1,818.6	-365.3	-317.1	483.7	0.00	0.00	0.00
2,000.0	20.91	220.96	1,912.0	-392.2	-340.5	519.4	0.00	0.00	0.00
2,100.0	20.91	220.96	2,005.4	-419.2	-363.9	555.1	0.00	0.00	0.00
2,200.0	20.91	220.96	2,098.8	-446.1	-387.3	590.8	0.00	0.00	0.00
2,300.0	20.91	220.96	2,192.3	-473.1	-410.7	626.5	0.00	0.00	0.00
2,400.0	20.91	220.96	2,285.7	-500.0	-434.1	662.1	0.00	0.00	0.00
2,500.0	20.91	220.96	2,379.1	-527.0	-457.5	697.8	0.00	0.00	0.00
9 5/8"									
2,530.0	20.91	220.96	2,407.1	-535.0	-464.5	708.5	0.00	0.00	0.00
2,600.0	20.91	220.96	2,472.5	-553.9	-480.9	733.5	0.00	0.00	0.00
2,700.0	20.91	220.96	2,565.9	-580.9	-504.3	769.2	0.00	0.00	0.00
2,800.0	20.91	220.96	2,659.3	-607.8	-527.7	804.9	0.00	0.00	0.00
2,900.0	20.91	220.96	2,752.7	-634.8	-551.1	840.6	0.00	0.00	0.00
Wasatch									
2,953.8	20.91	220.96	2,803.0	-649.3	-563.6	859.8	0.00	0.00	0.00
3,000.0	20.91	220.96	2,846.2	-661.7	-574.4	876.3	0.00	0.00	0.00
3,100.0	20.91	220.96	2,939.6	-688.7	-597.8	912.0	0.00	0.00	0.00
3,200.0	20.91	220.96	3,033.0	-715.6	-621.2	947.6	0.00	0.00	0.00
3,300.0	20.91	220.96	3,126.4	-742.5	-644.6	983.3	0.00	0.00	0.00
3,400.0	20.91	220.96	3,219.8	-769.5	-668.0	1,019.0	0.00	0.00	0.00
3,500.0	20.91	220.96	3,313.2	-796.4	-691.4	1,054.7	0.00	0.00	0.00
3,600.0	20.91	220.96	3,406.7	-823.4	-714.8	1,090.4	0.00	0.00	0.00
3,700.0	20.91	220.96	3,500.1	-850.3	-738.2	1,126.1	0.00	0.00	0.00
3,800.0	20.91	220.96	3,593.5	-877.3	-761.6	1,161.8	0.00	0.00	0.00
3,900.0	20.91	220.96	3,686.9	-904.2	-785.0	1,197.4	0.00	0.00	0.00
4,000.0	20.91	220.96	3,780.3	-931.2	-808.4	1,233.1	0.00	0.00	0.00
4,100.0	20.91	220.96	3,873.7	-958.1	-831.8	1,268.8	0.00	0.00	0.00
4,200.0	20.91	220.96	3,967.1	-985.1	-855.2	1,304.5	0.00	0.00	0.00
4,300.0	20.91	220.96	4,060.6	-1,012.0	-878.6	1,340.2	0.00	0.00	0.00
4,400.0	20.91	220.96	4,154.0	-1,039.0	-902.0	1,375.9	0.00	0.00	0.00



Well Planning Report



Database: EDM 5000.1 Single User Db
Company: Laramie Energy, LLC
Project: Garfield County, CO
Site: CC 0697-03-07 Pad
Well: CC 0697-03-17W
Wellbore: Wellbore #1
Design: Design #5

Local Co-ordinate Reference: Well CC 0697-03-17W
TVD Reference: well @ 8458.0usft (30' RKB)
MD Reference: well @ 8458.0usft (30' RKB)
North Reference: True
Survey Calculation Method: Minimum Curvature

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)
4,500.0	20.91	220.96	4,247.4	-1,065.9	-925.4	1,411.6	0.00	0.00	0.00
4,600.0	20.91	220.96	4,340.8	-1,092.9	-948.8	1,447.2	0.00	0.00	0.00
4,700.0	20.91	220.96	4,434.2	-1,119.8	-972.2	1,482.9	0.00	0.00	0.00
4,800.0	20.91	220.96	4,527.6	-1,146.8	-995.6	1,518.6	0.00	0.00	0.00
Wasatch 'G' Sand									
4,870.0	20.91	220.96	4,593.0	-1,165.6	-1,011.9	1,543.6	0.00	0.00	0.00
4,900.0	20.91	220.96	4,621.1	-1,173.7	-1,018.9	1,554.3	0.00	0.00	0.00
5,000.0	20.91	220.96	4,714.5	-1,200.7	-1,042.3	1,590.0	0.00	0.00	0.00
Fort Union									
5,094.8	20.91	220.96	4,803.0	-1,226.2	-1,064.5	1,623.8	0.00	0.00	0.00
5,100.0	20.91	220.96	4,807.9	-1,227.6	-1,065.7	1,625.7	0.00	0.00	0.00
5,200.0	20.91	220.96	4,901.3	-1,254.6	-1,089.1	1,661.4	0.00	0.00	0.00
5,300.0	20.91	220.96	4,994.7	-1,281.5	-1,112.5	1,697.1	0.00	0.00	0.00
5,400.0	20.91	220.96	5,088.1	-1,308.5	-1,135.9	1,732.7	0.00	0.00	0.00
5,500.0	20.91	220.96	5,181.6	-1,335.4	-1,159.3	1,768.4	0.00	0.00	0.00
5,600.0	20.91	220.96	5,275.0	-1,362.4	-1,182.7	1,804.1	0.00	0.00	0.00
5,700.0	20.91	220.96	5,368.4	-1,389.3	-1,206.1	1,839.8	0.00	0.00	0.00
5,800.0	20.91	220.96	5,461.8	-1,416.3	-1,229.5	1,875.5	0.00	0.00	0.00
5,900.0	20.91	220.96	5,555.2	-1,443.2	-1,252.9	1,911.2	0.00	0.00	0.00
6,000.0	20.91	220.96	5,648.6	-1,470.2	-1,276.3	1,946.9	0.00	0.00	0.00
6,100.0	20.91	220.96	5,742.0	-1,497.1	-1,299.7	1,982.5	0.00	0.00	0.00
6,200.0	20.91	220.96	5,835.5	-1,524.0	-1,323.1	2,018.2	0.00	0.00	0.00
6,300.0	20.91	220.96	5,928.9	-1,551.0	-1,346.5	2,053.9	0.00	0.00	0.00
6,400.0	20.91	220.96	6,022.3	-1,577.9	-1,369.9	2,089.6	0.00	0.00	0.00
6,500.0	20.91	220.96	6,115.7	-1,604.9	-1,393.3	2,125.3	0.00	0.00	0.00
Ohio Creek									
6,522.8	20.91	220.96	6,137.0	-1,611.0	-1,398.6	2,133.4	0.00	0.00	0.00
6,600.0	20.91	220.96	6,209.1	-1,631.8	-1,416.7	2,161.0	0.00	0.00	0.00
6,700.0	20.91	220.96	6,302.5	-1,658.8	-1,440.1	2,196.7	0.00	0.00	0.00
6,800.0	20.91	220.96	6,396.0	-1,685.7	-1,463.4	2,232.4	0.00	0.00	0.00
6,900.0	20.91	220.96	6,489.4	-1,712.7	-1,486.8	2,268.0	0.00	0.00	0.00
Williams Fork									
6,938.1	20.91	220.96	6,525.0	-1,723.0	-1,495.8	2,281.6	0.00	0.00	0.00
Drop 3° / 100'									
6,985.7	20.91	220.96	6,569.4	-1,735.8	-1,506.9	2,298.6	0.00	0.00	0.00
7,000.0	20.48	220.96	6,582.8	-1,739.6	-1,510.2	2,303.7	3.00	-3.00	0.00
7,100.0	17.48	220.96	6,677.4	-1,764.2	-1,531.5	2,336.2	3.00	-3.00	0.00
7,200.0	14.48	220.96	6,773.5	-1,784.9	-1,549.6	2,363.7	3.00	-3.00	0.00
7,300.0	11.48	220.96	6,870.9	-1,801.9	-1,564.3	2,386.2	3.00	-3.00	0.00
7,400.0	8.48	220.96	6,969.4	-1,815.0	-1,575.6	2,403.5	3.00	-3.00	0.00
7,500.0	5.48	220.96	7,068.6	-1,824.2	-1,583.6	2,415.7	3.00	-3.00	0.00
7,600.0	2.48	220.96	7,168.4	-1,829.4	-1,588.2	2,422.6	3.00	-3.00	0.00
EOD @ Vertical - TOG									
7,682.6	0.00	0.00	7,251.0	-1,830.7	-1,589.3	2,424.4	3.00	-3.00	0.00
7,700.0	0.00	0.00	7,268.4	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
7,800.0	0.00	0.00	7,368.4	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
7,900.0	0.00	0.00	7,468.4	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
8,000.0	0.00	0.00	7,568.4	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
8,100.0	0.00	0.00	7,668.4	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
8,200.0	0.00	0.00	7,768.4	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
8,300.0	0.00	0.00	7,868.4	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
8,400.0	0.00	0.00	7,968.4	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
8,500.0	0.00	0.00	8,068.4	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00



Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CC 0697-03-17W
Company:	Laramie Energy, LLC	TVD Reference:	well @ 8458.0usft (30' RKB)
Project:	Garfield County, CO	MD Reference:	well @ 8458.0usft (30' RKB)
Site:	CC 0697-03-07 Pad	North Reference:	True
Well:	CC 0697-03-17W	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #5		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Buidl Rate (°/100usft)	Turn Rate (°/100usft)
8,600.0	0.00	0.00	8,168.4	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
8,700.0	0.00	0.00	8,268.4	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
8,800.0	0.00	0.00	8,368.4	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
8,900.0	0.00	0.00	8,468.4	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
9,000.0	0.00	0.00	8,568.4	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
9,100.0	0.00	0.00	8,668.4	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
9,200.0	0.00	0.00	8,768.4	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
Cameo									
9,206.6	0.00	0.00	8,775.0	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
9,300.0	0.00	0.00	8,868.4	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
9,400.0	0.00	0.00	8,968.4	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
9,500.0	0.00	0.00	9,068.4	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
Base Cameo Coal									
9,573.6	0.00	0.00	9,142.0	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
9,600.0	0.00	0.00	9,168.4	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
Rollins									
9,619.6	0.00	0.00	9,188.0	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
9,700.0	0.00	0.00	9,268.4	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
9,800.0	0.00	0.00	9,368.4	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
Cozzette									
9,831.6	0.00	0.00	9,400.0	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
9,900.0	0.00	0.00	9,468.4	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
10,000.0	0.00	0.00	9,568.4	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
Corcoran									
10,085.6	0.00	0.00	9,654.0	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
10,100.0	0.00	0.00	9,668.4	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
10,200.0	0.00	0.00	9,768.4	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
10,300.0	0.00	0.00	9,868.4	-1,830.7	-1,589.3	2,424.4	0.00	0.00	0.00
TD @ 10409.6' MD / 9978.0' TVD									
10,409.6	0.00	0.00	9,978.0	-1,830.7	-1,589.3	2,424.4	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 D#4 - CC 0697-	0.00	0.00	9,978.0	-1,830.7	-1,589.3	1,637,782.64	2,235,745.74	39.553194	-108.210801
- plan hits target center									
- Circle (radius 50.0)									

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
2,530.0	2,407.1	9 5/8"	9-5/8	14-3/4



Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CC 0697-03-17W
Company:	Laramie Energy, LLC	TVD Reference:	well @ 8458 0usft (30' RKB)
Project:	Garfield County, CO	MD Reference:	well @ 8458 0usft (30' RKB)
Site:	CC 0697-03-07 Pad	North Reference:	True
Well:	CC 0697-03-17W	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #5		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
847.3	835.0	Mahogany			
2,953.8	2,803.0	Wasatch			
4,870.0	4,593.0	Wasatch 'G' Sand			
5,094.8	4,803.0	Fort Union			
6,522.8	6,137.0	Ohio Creek			
6,938.1	6,525.0	Williams Fork			
7,682.6	7,251.0	TOG			
9,206.6	8,775.0	Cameo			
9,573.6	9,142.0	Base Cameo Coal			
9,619.6	9,188.0	Rollins			
9,831.6	9,400.0	Cozzette			
10,085.6	9,654.0	Corcoran			

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 3.00°/100')
896.9	881.6	-95.0	-82.4	EOB @ 20.91° Inc. / 220.96° Azm
6,985.7	6,569.4	-1,735.8	-1,506.9	Drop 3° / 100'
7,682.6	7,251.0	-1,830.7	-1,589.3	EOD @ Vertical
10,409.6	9,978.0	-1,830.7	-1,589.3	TD @ 10409.6' MD / 9978.0' TVD