

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

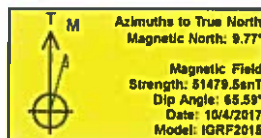
WELL DETAILS: CC Federal 0697-04-05E

+N-S: 0.0 +E-W: 0.0 Northing: 1639434.19
Ground Level: 8609.0 Easting: 2233536.99 Latitude: 39.557646
Longitude: -108.218806

Project: Garfield County, CO
Site: CC 604-41-32 Pad
Well: CC Federal 0697-04-05E
Wellbore: Wellbore #1
Design: Design #3
Latitude: 39.557645
Longitude: -108.218806
Ground Level: 8609.0
Well @ 8639.0ush (RKB 30')

FORMATION TOP DETAILS

TVOPath	MDPath	Formation
806.0	807.9	Mahogany
4777.0	4809.6	Wesatch 'Q' Sand
6477.0	6522.1	Ohio Creek
6627.0	6673.2	Williams Fork
7427.0	7477.9	TOG
9077.0	9127.9	Cameo
9307.0	9357.9	Base Cameo Coal
9327.0	9377.9	Rollins



REFERENCE INFORMATION

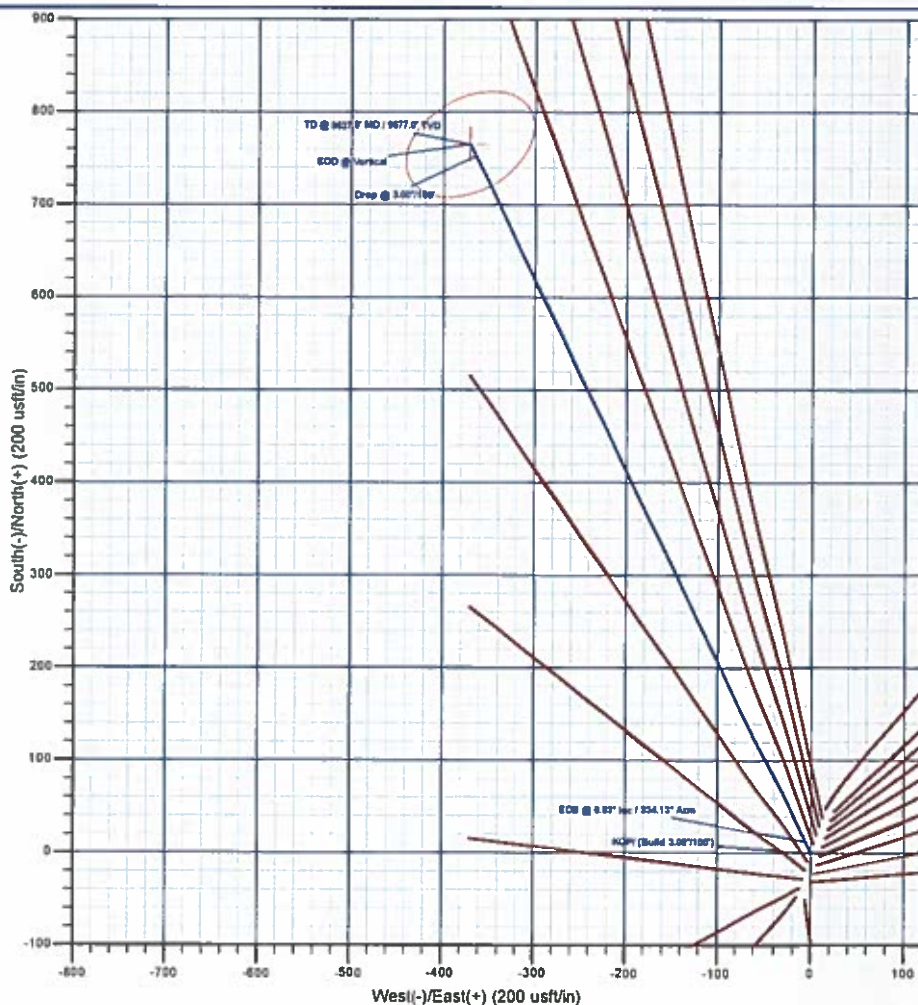
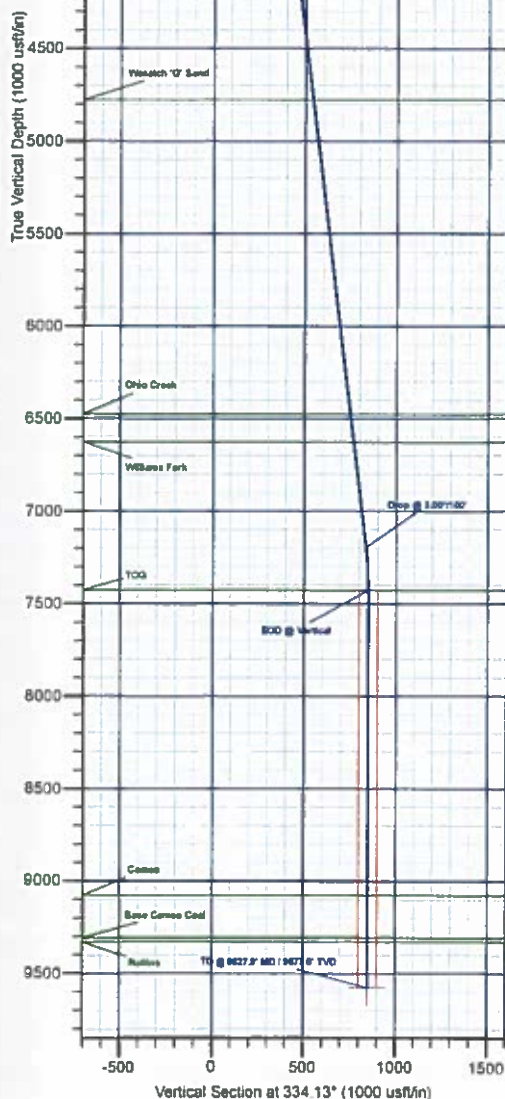
Co-ordinate (NE) Reference: Well CC Federal 0697-04-05E, True North
Vertical (TVD) Reference: Well @ 8639.0ush (RKB 30')
Section (VS) Reference: Well @ 8639.0ush (RKB 30')
Measured Depth Reference: Well @ 8639.0ush (RKB 30')
Calculation Method: Minimum Curvature

DESIGN TARGET DETAILS

Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
PBHL - CC Federal 0697-04-05E	9577.0	765.3	-371.0	1640210.26	2233189.01	39.559646	-108.220122

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 3.00"/100')
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	EOB @ 6.93" Inc / 334.13" Azm
431.1	6.93	334.13	430.5	12.6	-6.1	3.00	334.13	14.0	Drop @ 3.00"/100'
7246.9	6.93	334.13	7198.5	782.7	-364.9	0.00	0.00	836.5	EOD @ Vertical
7477.9	0.00	0.00	7427.0	765.3	-371.0	3.00	180.00	850.5	TD @ 9627.9' MD / 9577.0' TVD
9627.9	0.00	0.00	9577.0	765.3	-371.0	0.00	0.00	850.5	



Plan: Design #3 (CC Federal 0697-04-05E/Wellbore #1)

Created By: Will Jircik Date: 16:00, February 04 2019



Laramie Energy, LLC

Garfield County, CO

CC 604-41-32 Pad

CC Federal 0697-04-05E

Wellbore #1

Plan: Design #3

QES Well Planning Report

04 February, 2019





Well Planning Report



Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Well CC Federal 0697-04-05E
Company:	Laramie Energy, LLC	TVD Reference:	Well @ 8639.0usft (RKB 30')
Project:	Garfield County, CO	MD Reference:	Well @ 8639.0usft (RKB 30')
Site:	CC 604-41-32 Pad	North Reference:	True
Well:	CC Federal 0697-04-05E	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #3		

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 604-41-32 Pad			
Site Position:		Northing:	1,639,464.67 usft	Latitude: 39.557630
From:	Lat/Long	Easting:	2,233,548.14 usft	Longitude: -108.218770
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence: -1.71°

Well	CC Federal 0697-04-05E			
Well Position	+N/-S	-30.8 usft	Northing:	1,639,434.19 usft
	+E/-W	-10.2 usft	Easting:	2,233,536.99 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:		Ground Level: 8,609.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	10/4/2017	9.77	65.59	51,479.51176752

Design	Design #3			
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	334.13

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	
431.1	6.93	334.13	430.5	12.6	-6.1	3.00	3.00	0.00	334.13	
7,246.9	6.93	334.13	7,196.5	752.7	-364.9	0.00	0.00	0.00	0.00	
7,477.9	0.00	0.00	7,427.0	765.3	-371.0	3.00	-3.00	0.00	180.00	
9,627.9	0.00	0.00	9,577.0	765.3	-371.0	0.00	0.00	0.00	0.00	PBHL - CC Federal 01



Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CC Federal 0697-04-05E
Company:	Laramie Energy, LLC	TVD Reference:	Well @ 8639.0usft (RKB 30')
Project:	Garfield County, CO	MD Reference:	Well @ 8639.0usft (RKB 30')
Site:	CC 604-41-32 Pad	North Reference:	True
Well:	CC Federal 0697-04-05E	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #3		

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	334.13	300.0	2.4	-1.1	2.6	3.00	3.00	0.00
400.0	6.00	334.13	399.6	9.4	-4.6	10.5	3.00	3.00	0.00
EOB @ 6.93" Inc / 334.13" Azm									
431.1	6.93	334.13	430.5	12.6	-6.1	14.0	3.00	3.00	0.00
500.0	6.93	334.13	498.9	20.0	-9.7	22.3	0.00	0.00	0.00
600.0	6.93	334.13	598.2	30.9	-15.0	34.3	0.00	0.00	0.00
Mahogany									
607.9	6.93	334.13	606.0	31.8	-15.4	35.3	0.00	0.00	0.00
700.0	6.93	334.13	697.5	41.8	-20.3	46.4	0.00	0.00	0.00
800.0	6.93	334.13	796.7	52.6	-25.5	58.5	0.00	0.00	0.00
900.0	6.93	334.13	896.0	63.5	-30.8	70.6	0.00	0.00	0.00
1,000.0	6.93	334.13	995.3	74.3	-36.0	82.6	0.00	0.00	0.00
1,100.0	6.93	334.13	1,094.5	85.2	-41.3	94.7	0.00	0.00	0.00
1,200.0	6.93	334.13	1,193.8	96.1	-46.6	106.8	0.00	0.00	0.00
1,300.0	6.93	334.13	1,293.1	106.9	-51.8	118.8	0.00	0.00	0.00
1,400.0	6.93	334.13	1,392.4	117.8	-57.1	130.9	0.00	0.00	0.00
1,500.0	6.93	334.13	1,491.6	128.6	-62.4	143.0	0.00	0.00	0.00
1,600.0	6.93	334.13	1,590.9	139.5	-67.6	155.0	0.00	0.00	0.00
1,700.0	6.93	334.13	1,690.2	150.4	-72.9	167.1	0.00	0.00	0.00
1,800.0	6.93	334.13	1,789.4	161.2	-78.2	179.2	0.00	0.00	0.00
1,900.0	6.93	334.13	1,888.7	172.1	-83.4	191.2	0.00	0.00	0.00
2,000.0	6.93	334.13	1,988.0	182.9	-88.7	203.3	0.00	0.00	0.00
2,100.0	6.93	334.13	2,087.2	193.8	-94.0	215.4	0.00	0.00	0.00
2,200.0	6.93	334.13	2,186.5	204.7	-99.2	227.4	0.00	0.00	0.00
2,300.0	6.93	334.13	2,285.8	215.5	-104.5	239.5	0.00	0.00	0.00
2,400.0	6.93	334.13	2,385.0	226.4	-109.8	251.6	0.00	0.00	0.00
2,500.0	6.93	334.13	2,484.3	237.2	-115.0	263.7	0.00	0.00	0.00
2,600.0	6.93	334.13	2,583.6	248.1	-120.3	275.7	0.00	0.00	0.00
2,700.0	6.93	334.13	2,682.9	259.0	-125.6	287.8	0.00	0.00	0.00
2,800.0	6.93	334.13	2,782.1	269.8	-130.8	299.9	0.00	0.00	0.00
2,900.0	6.93	334.13	2,881.4	280.7	-136.1	311.9	0.00	0.00	0.00
3,000.0	6.93	334.13	2,980.7	291.5	-141.3	324.0	0.00	0.00	0.00
3,100.0	6.93	334.13	3,079.9	302.4	-146.6	336.1	0.00	0.00	0.00
3,200.0	6.93	334.13	3,179.2	313.3	-151.9	348.1	0.00	0.00	0.00
3,300.0	6.93	334.13	3,278.5	324.1	-157.1	360.2	0.00	0.00	0.00
3,400.0	6.93	334.13	3,377.7	335.0	-162.4	372.3	0.00	0.00	0.00
3,500.0	6.93	334.13	3,477.0	345.8	-167.7	384.3	0.00	0.00	0.00
3,600.0	6.93	334.13	3,576.3	356.7	-172.9	396.4	0.00	0.00	0.00
3,700.0	6.93	334.13	3,675.5	367.6	-178.2	408.5	0.00	0.00	0.00
3,800.0	6.93	334.13	3,774.8	378.4	-183.5	420.6	0.00	0.00	0.00
3,900.0	6.93	334.13	3,874.1	389.3	-188.7	432.6	0.00	0.00	0.00
4,000.0	6.93	334.13	3,973.3	400.1	-194.0	444.7	0.00	0.00	0.00
4,100.0	6.93	334.13	4,072.6	411.0	-199.3	456.8	0.00	0.00	0.00
4,200.0	6.93	334.13	4,171.9	421.9	-204.5	468.8	0.00	0.00	0.00
4,300.0	6.93	334.13	4,271.2	432.7	-209.8	480.9	0.00	0.00	0.00
4,400.0	6.93	334.13	4,370.4	443.6	-215.1	493.0	0.00	0.00	0.00
4,500.0	6.93	334.13	4,469.7	454.4	-220.3	505.0	0.00	0.00	0.00
4,600.0	6.93	334.13	4,569.0	465.3	-225.6	517.1	0.00	0.00	0.00
4,700.0	6.93	334.13	4,668.2	476.2	-230.9	529.2	0.00	0.00	0.00



Well Planning Report



Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Well CC Federal 0697-04-05E
Company:	Laramie Energy, LLC	TVD Reference:	Well @ 8639.0usft (RKB 30')
Project:	Garfield County, CO	MD Reference:	Well @ 8639 Dufst (RKB 30')
Site:	CC 604-41-32 Pad	North Reference:	True
Well:	CC Federal 0697-04-05E	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #3		

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	6.93	334.13	4,767.5	487.0	-236.1	541.2	0.00	0.00	0.00
Wasatch 'G' Sand									
4,809.6	6.93	334.13	4,777.0	488.1	-236.6	542.4	0.00	0.00	0.00
4,900.0	6.93	334.13	4,866.8	497.9	-241.4	553.3	0.00	0.00	0.00
5,000.0	6.93	334.13	4,966.0	508.7	-246.6	565.4	0.00	0.00	0.00
5,100.0	6.93	334.13	5,065.3	519.6	-251.9	577.4	0.00	0.00	0.00
5,200.0	6.93	334.13	5,164.6	530.5	-257.2	589.5	0.00	0.00	0.00
5,300.0	6.93	334.13	5,263.8	541.3	-262.4	601.6	0.00	0.00	0.00
5,400.0	6.93	334.13	5,363.1	552.2	-267.7	613.7	0.00	0.00	0.00
5,500.0	6.93	334.13	5,462.4	563.0	-273.0	625.7	0.00	0.00	0.00
5,600.0	6.93	334.13	5,561.7	573.9	-278.2	637.8	0.00	0.00	0.00
5,700.0	6.93	334.13	5,660.9	584.8	-283.5	649.9	0.00	0.00	0.00
5,800.0	6.93	334.13	5,760.2	595.6	-288.8	661.9	0.00	0.00	0.00
5,900.0	6.93	334.13	5,859.5	606.5	-294.0	674.0	0.00	0.00	0.00
6,000.0	6.93	334.13	5,958.7	617.3	-299.3	686.1	0.00	0.00	0.00
6,100.0	6.93	334.13	6,058.0	628.2	-304.6	698.1	0.00	0.00	0.00
6,200.0	6.93	334.13	6,157.3	639.1	-309.8	710.2	0.00	0.00	0.00
6,300.0	6.93	334.13	6,256.5	649.9	-315.1	722.3	0.00	0.00	0.00
6,400.0	6.93	334.13	6,355.8	660.8	-320.4	734.3	0.00	0.00	0.00
6,500.0	6.93	334.13	6,455.1	671.6	-325.6	746.4	0.00	0.00	0.00
Ohio Creek									
6,522.1	6.93	334.13	6,477.0	674.0	-326.8	749.1	0.00	0.00	0.00
6,600.0	6.93	334.13	6,554.3	682.5	-330.9	758.5	0.00	0.00	0.00
Williams Fork									
6,673.2	6.93	334.13	6,627.0	690.4	-334.7	767.3	0.00	0.00	0.00
6,700.0	6.93	334.13	6,653.6	693.4	-336.2	770.5	0.00	0.00	0.00
6,800.0	6.93	334.13	6,752.9	704.2	-341.4	782.6	0.00	0.00	0.00
6,900.0	6.93	334.13	6,852.2	715.1	-346.7	794.7	0.00	0.00	0.00
7,000.0	6.93	334.13	6,951.4	725.9	-352.0	806.8	0.00	0.00	0.00
7,100.0	6.93	334.13	7,050.7	736.8	-357.2	818.8	0.00	0.00	0.00
7,200.0	6.93	334.13	7,150.0	747.7	-362.5	830.9	0.00	0.00	0.00
Drop @ 3.00°/100'									
7,246.9	6.93	334.13	7,196.5	752.7	-364.9	836.5	0.00	0.00	0.00
7,300.0	5.34	334.13	7,249.3	757.9	-367.4	842.2	3.00	-3.00	0.00
7,400.0	2.34	334.13	7,349.1	763.9	-370.3	848.9	3.00	-3.00	0.00
EOD @ Vertical - TOG									
7,477.9	0.00	0.00	7,427.0	765.3	-371.0	850.5	3.00	-3.00	0.00
7,500.0	0.00	0.00	7,449.1	765.3	-371.0	850.5	0.00	0.00	0.00
7,600.0	0.00	0.00	7,549.1	765.3	-371.0	850.5	0.00	0.00	0.00
7,700.0	0.00	0.00	7,649.1	765.3	-371.0	850.5	0.00	0.00	0.00
7,800.0	0.00	0.00	7,749.1	765.3	-371.0	850.5	0.00	0.00	0.00
7,900.0	0.00	0.00	7,849.1	765.3	-371.0	850.5	0.00	0.00	0.00
8,000.0	0.00	0.00	7,949.1	765.3	-371.0	850.5	0.00	0.00	0.00
8,100.0	0.00	0.00	8,049.1	765.3	-371.0	850.5	0.00	0.00	0.00
8,200.0	0.00	0.00	8,149.1	765.3	-371.0	850.5	0.00	0.00	0.00
8,300.0	0.00	0.00	8,249.1	765.3	-371.0	850.5	0.00	0.00	0.00
8,400.0	0.00	0.00	8,349.1	765.3	-371.0	850.5	0.00	0.00	0.00
8,500.0	0.00	0.00	8,449.1	765.3	-371.0	850.5	0.00	0.00	0.00
8,600.0	0.00	0.00	8,549.1	765.3	-371.0	850.5	0.00	0.00	0.00
8,700.0	0.00	0.00	8,649.1	765.3	-371.0	850.5	0.00	0.00	0.00
8,800.0	0.00	0.00	8,749.1	765.3	-371.0	850.5	0.00	0.00	0.00
8,900.0	0.00	0.00	8,849.1	765.3	-371.0	850.5	0.00	0.00	0.00
9,000.0	0.00	0.00	8,949.1	765.3	-371.0	850.5	0.00	0.00	0.00
9,100.0	0.00	0.00	9,049.1	765.3	-371.0	850.5	0.00	0.00	0.00



Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CC Federal 0697-04-05E
Company:	Laramie Energy, LLC	TVD Reference:	Well @ 8639.0usft (RKB 30')
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Wellbore:	Wellbore #1		
Design:	Design #3		

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)
Cameo									
9,127.9	0.00	0.00	9,077.0	765.3	-371.0	850.5	0.00	0.00	0.00
9,200.0	0.00	0.00	9,149.1	765.3	-371.0	850.5	0.00	0.00	0.00
9,300.0	0.00	0.00	9,249.1	765.3	-371.0	850.5	0.00	0.00	0.00
Base Cameo Coal									
9,357.9	0.00	0.00	9,307.0	765.3	-371.0	850.5	0.00	0.00	0.00
Rollins									
9,377.9	0.00	0.00	9,327.0	765.3	-371.0	850.5	0.00	0.00	0.00
9,400.0	0.00	0.00	9,349.1	765.3	-371.0	850.5	0.00	0.00	0.00
9,500.0	0.00	0.00	9,449.1	765.3	-371.0	850.5	0.00	0.00	0.00
9,600.0	0.00	0.00	9,549.1	765.3	-371.0	850.5	0.00	0.00	0.00
TD @ 9627.9' MD / 9577.0' TVD									
9,627.9	0.00	0.00	9,577.0	765.3	-371.0	850.5	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 Federal 0697	0.00	0.00	9,577.0	765.3	-371.0	1,640,210.25	2,233,189.01	39.559646	-108.220122
- plan hits target center									
- Ellipse (radii L50.0 W75.0 on 150.00 azi)									

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
2,530.0	2,514.1	9 5/8"	9-5/8	14-3/4

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
607.9	606.0	Mahogany			
4,809.6	4,777.0	Wasatch 'G' Sand			
6,522.1	6,477.0	Ohio Creek			
6,673.2	6,627.0	Williams Fork			
7,477.9	7,427.0	TOG			
9,127.9	9,077.0	Cameo			
9,357.9	9,307.0	Base Cameo Coal			
9,377.9	9,327.0	Rollins			



Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CC Federal 0697-04-05E
Company:	Laramie Energy, LLC	TVD Reference:	Well @ 8639.0usft (RKB 30')
Project:	Garfield County, CO	MD Reference:	Well @ 8639.0usft (RKB 30')
Site:	CC 604-41-32 Pad	North Reference:	True
Well:	CC Federal 0697-04-05E	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #3		

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')
431.1	430.5	12.6	-6.1	EOB @ 6.93° Inc / 334.13° Azm
7,246.9	7,196.5	752.7	-364.9	Drop @ 3.00"/100'
7,477.9	7,427.0	765.3	-371.0	EOD @ Vertical
9,627.9	9,577.0	765.3	-371.0	TD @ 9627.9' MD / 9577.0' TVD