

**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 697-10-03E**

+N/-S 0.0 +E/-W 0.0 Northing 1834561.80 Easting 2236719.00 8595.0 Latitude 39.544490 Longitude -108.207013

Project: Garfield County, CO  
Site: CC 610-21-41 Pad  
Well: CC 697-10-03E  
Wellbore: Wellbore #1  
Design: Design #2  
Latitude: 39.544490  
Longitude: -108.207013  
Ground Level: 8595.0  
RKB @ 8625.0usft (H&P #522)



**REFERENCE INFORMATION**

Co-ordinate (NE) Reference: Well CC 697-10-03E, True North  
Vertical (TVD) Reference: RKB @ 8625.0usft (H&P #522)  
Section (VS) Reference: Slot - (0.0N, 0.0E)  
Measured Depth Reference: RKB @ 8625.0usft (H&P #522)  
Calculation Method: Minimum Curvature

**FORMATION TOP DETAILS**

TVDPath	MDPath	Formation
1012.0	1023.0	Mahogany
2980.0	3111.0	Wasatch
4778.0	5010.4	Wasatch 'Q' Sand
4860.0	5233.2	Fort Union
6514.0	6866.9	Ohio Creek
6702.0	7060.4	Williams Fork
7428.0	7804.3	TQG
8952.0	9328.3	Cameo
9318.0	9695.3	Base Cameo Coal
9365.0	9741.3	Rollins

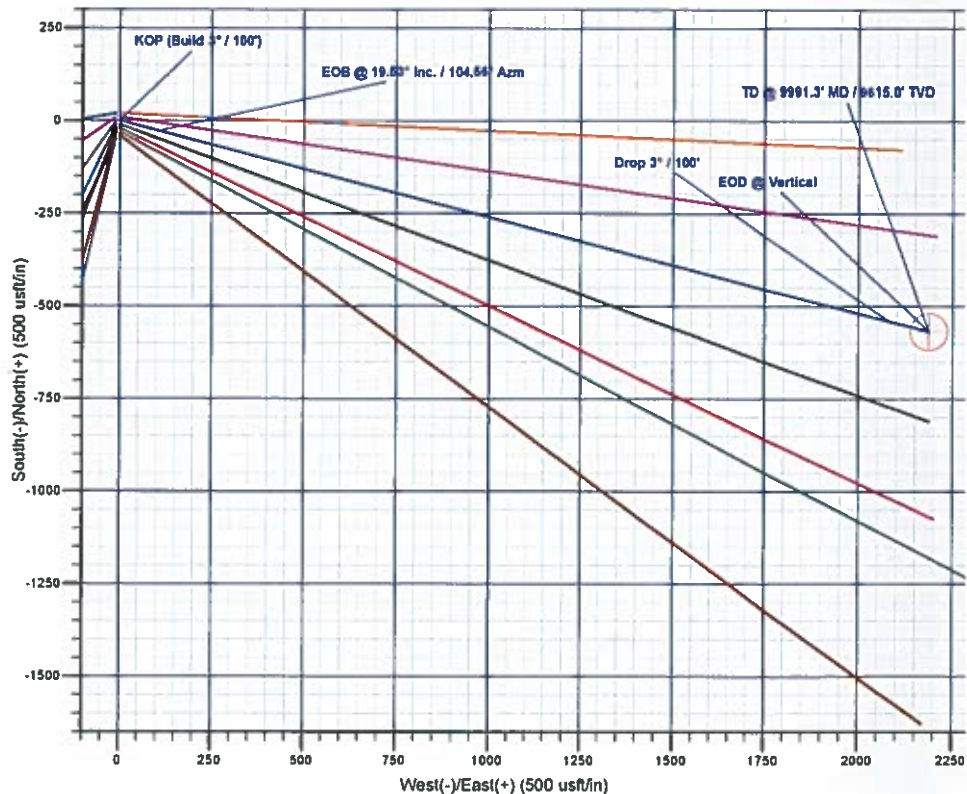
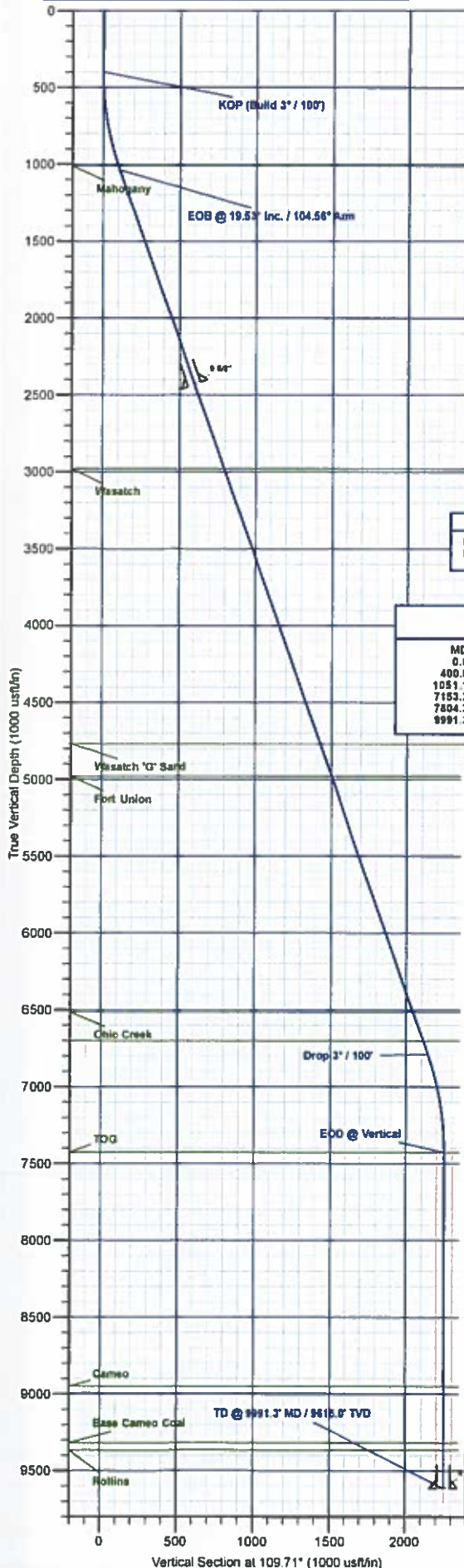


**DESIGN TARGET DETAILS**

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL - CC 697-10-03E	9615.0	-568.1	2187.5	1833948.76	2238888.58	39.542930	-108.199256

**SECTION DETAILS**

MD	Inc	Azi	TVD	+N/-S	+E/-W	Deg	TFace	VSect	Annotation
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.0	KOP (Build 3" / 100')
1051.1	19.53	104.56	1036.6	-27.5	104.4	3.00	104.56	109.5	EOB @ 19.53" Inc. / 104.56" Azm
7153.2	19.53	104.56	6783.4	-540.5	2081.1	0.00	0.00	2141.5	Drop 3" / 100'
7804.3	0.00	0.00	7428.0	-568.1	2187.5	3.00	180.00	2250.9	EOB @ Vertical
9991.3	0.00	0.00	9615.0	-568.1	2187.5	0.00	0.00	2250.9	TD @ 9991.3' MD / 9615.0' TVD



Plan: Design #2 (CC 697-10-03E/Wellbore #1)

Created By: Will Jircik Date: 15:50, September 17 2018



# **Laramie Energy, LLC**

**Garfield County, CO**

**CC 610-21-41 Pad**

**CC 697-10-03E**

**Wellbore #1**

**Plan: Design #2**

## **QES Well Planning Report**

**17 September, 2018**





# Well Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well CC 697-10-03E
<b>Company:</b>	Laramie Energy, LLC	<b>TVD Reference:</b>	RKB @ 8625.0usft (H&P #522)
<b>Project:</b>	Garfield County, CO	<b>MD Reference:</b>	RKB @ 8625.0usft (H&P #522)
<b>Site:</b>	CC 610-21-41 Pad	<b>North Reference:</b>	True
<b>Well:</b>	CC 697-10-03E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #2		

<b>Project</b>	Garfield County, CO		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Central Zone		

<b>Site</b>	CC 610-21-41 Pad			
<b>Site Position:</b>		<b>Northing:</b>	1,634,574.32 usft	<b>Latitude:</b> 39.544469
<b>From:</b>	Lat/Long	<b>Easting:</b>	2,236,708.86 usft	<b>Longitude:</b> -108.207048
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b> -1.71 "

<b>Well</b>	CC 697-10-03E			
<b>Well Position</b>	+N/-S	7.8 usft	<b>Northing:</b>	1,634,581.80 usft
	+E/-W	9.9 usft	<b>Easting:</b>	2,236,719.00 usft
<b>Position Uncertainty</b>	0.0 usft		<b>Wellhead Elevation:</b>	<b>Ground Level:</b> 8,595.0 usft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	8/10/2017	9.78	65.59	51,490.83151420

<b>Design</b>	Design #2			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	109.71

<b>Plan Sections</b>										
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	
400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,051.1	19.53	104.56	1,038.6	-27.6	106.4	3.00	3.00	0.00	104.56	
7,153.2	19.53	104.56	6,789.4	-540.5	2,081.1	0.00	0.00	0.00	0.00	
7,804.3	0.00	0.00	7,428.0	-568.1	2,187.5	3.00	-3.00	0.00	180.00	
9,991.3	0.00	0.00	9,615.0	-568.1	2,187.5	0.00	0.00	0.00	0.00	PBHL - CC 697-10-





## Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CC 697-10-03E
Company:	Laramie Energy, LLC	TVD Reference:	RKB @ 8625.0usft (H&P #522)
Project:	Garfield County, CO	MD Reference:	RKB @ 8625.0usft (H&P #522)
Site:	CC 610-21-41 Pad	North Reference:	True
Well:	CC 697-10-03E	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

## 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
<b>KOP (Build 3° / 100°)</b>									
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	3.00	104.56	500.0	-0.7	2.5	2.6	3.00	3.00	0.00
600.0	6.00	104.56	599.6	-2.6	10.1	10.4	3.00	3.00	0.00
700.0	9.00	104.56	698.8	-5.9	22.8	23.4	3.00	3.00	0.00
800.0	12.00	104.56	797.1	-10.5	40.4	41.6	3.00	3.00	0.00
900.0	15.00	104.56	894.3	-16.4	63.0	64.8	3.00	3.00	0.00
1,000.0	18.00	104.56	990.2	-23.5	90.5	93.1	3.00	3.00	0.00
<b>Mahogany</b>									
1,023.0	18.69	104.56	1,012.0	-25.3	97.5	100.3	3.00	3.00	0.00
<b>EOB @ 19.53° Inc. / 104.56° Azm</b>									
1,051.1	19.53	104.56	1,038.6	-27.6	106.4	109.5	3.00	3.00	0.00
1,100.0	19.53	104.56	1,084.6	-31.7	122.2	125.8	0.00	0.00	0.00
1,200.0	19.53	104.56	1,178.9	-40.1	154.6	159.1	0.00	0.00	0.00
1,300.0	19.53	104.56	1,273.1	-48.5	186.9	192.4	0.00	0.00	0.00
1,400.0	19.53	104.56	1,367.4	-57.0	219.3	225.7	0.00	0.00	0.00
1,500.0	19.53	104.56	1,461.6	-65.4	251.7	259.0	0.00	0.00	0.00
1,600.0	19.53	104.56	1,555.9	-73.8	284.0	292.3	0.00	0.00	0.00
1,700.0	19.53	104.56	1,650.1	-82.2	316.4	325.6	0.00	0.00	0.00
1,800.0	19.53	104.56	1,744.4	-90.6	348.7	358.9	0.00	0.00	0.00
1,900.0	19.53	104.56	1,838.6	-99.0	381.1	392.2	0.00	0.00	0.00
2,000.0	19.53	104.56	1,932.9	-107.4	413.5	425.5	0.00	0.00	0.00
2,100.0	19.53	104.56	2,027.1	-115.8	445.8	458.8	0.00	0.00	0.00
2,200.0	19.53	104.56	2,121.3	-124.2	478.2	492.1	0.00	0.00	0.00
2,300.0	19.53	104.56	2,215.6	-132.6	510.5	525.4	0.00	0.00	0.00
2,400.0	19.53	104.56	2,309.8	-141.0	542.9	558.7	0.00	0.00	0.00
2,500.0	19.53	104.56	2,404.1	-149.4	575.3	592.0	0.00	0.00	0.00
<b>9 5/8"</b>									
2,530.0	19.53	104.56	2,432.3	-151.9	585.0	601.9	0.00	0.00	0.00
2,600.0	19.53	104.56	2,498.3	-157.8	607.6	625.3	0.00	0.00	0.00
2,700.0	19.53	104.56	2,592.6	-166.2	640.0	658.6	0.00	0.00	0.00
2,800.0	19.53	104.56	2,686.8	-174.6	672.4	691.9	0.00	0.00	0.00
2,900.0	19.53	104.56	2,781.1	-183.0	704.7	725.2	0.00	0.00	0.00
3,000.0	19.53	104.56	2,875.3	-191.4	737.1	758.5	0.00	0.00	0.00
3,100.0	19.53	104.56	2,969.5	-199.8	769.4	791.8	0.00	0.00	0.00
<b>Wasatch</b>									
3,111.1	19.53	104.56	2,980.0	-200.8	773.0	795.4	0.00	0.00	0.00
3,200.0	19.53	104.56	3,063.8	-208.2	801.8	825.1	0.00	0.00	0.00
3,300.0	19.53	104.56	3,158.0	-216.6	834.2	858.4	0.00	0.00	0.00
3,400.0	19.53	104.56	3,252.3	-225.0	866.5	891.7	0.00	0.00	0.00
3,500.0	19.53	104.56	3,346.5	-233.5	898.9	925.0	0.00	0.00	0.00
3,600.0	19.53	104.56	3,440.8	-241.9	931.2	958.3	0.00	0.00	0.00
3,700.0	19.53	104.56	3,535.0	-250.3	963.6	991.6	0.00	0.00	0.00
3,800.0	19.53	104.56	3,629.3	-258.7	996.0	1,024.9	0.00	0.00	0.00
3,900.0	19.53	104.56	3,723.5	-267.1	1,028.3	1,058.2	0.00	0.00	0.00
4,000.0	19.53	104.56	3,817.7	-275.5	1,060.7	1,091.5	0.00	0.00	0.00
4,100.0	19.53	104.56	3,912.0	-283.9	1,093.1	1,124.8	0.00	0.00	0.00
4,200.0	19.53	104.56	4,006.2	-292.3	1,125.4	1,158.1	0.00	0.00	0.00
4,300.0	19.53	104.56	4,100.5	-300.7	1,157.8	1,191.4	0.00	0.00	0.00
4,400.0	19.53	104.56	4,194.7	-309.1	1,190.1	1,224.7	0.00	0.00	0.00



# Well Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well CC 697-10-03E
<b>Company:</b>	Laramie Energy, LLC	<b>TVD Reference:</b>	RKB @ 8625.0usft (H&P #522)
<b>Project:</b>	Garfield County, CO	<b>MD Reference:</b>	RKB @ 8625.0usft (H&P #522)
<b>Site:</b>	CC 610-21-41 Pad	<b>North Reference:</b>	True
<b>Well:</b>	CC 697-10-03E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #2		

## 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	19.53	104.56	4,289.0	-317.5	1,222.5	1,258.0	0.00	0.00	0.00
4,600.0	19.53	104.56	4,383.2	-325.9	1,254.9	1,291.3	0.00	0.00	0.00
4,700.0	19.53	104.56	4,477.5	-334.3	1,287.2	1,324.6	0.00	0.00	0.00
4,800.0	19.53	104.56	4,571.7	-342.7	1,319.6	1,357.9	0.00	0.00	0.00
4,900.0	19.53	104.56	4,666.0	-351.1	1,351.9	1,391.2	0.00	0.00	0.00
5,000.0	19.53	104.56	4,760.2	-359.5	1,384.3	1,424.5	0.00	0.00	0.00
<b>Wasatch 'G' Sand</b>									
5,010.4	19.53	104.56	4,770.0	-360.4	1,387.7	1,427.9	0.00	0.00	0.00
5,100.0	19.53	104.56	4,854.4	-367.9	1,416.7	1,457.8	0.00	0.00	0.00
5,200.0	19.53	104.56	4,948.7	-376.3	1,449.0	1,491.1	0.00	0.00	0.00
<b>Fort Union</b>									
5,233.2	19.53	104.56	4,980.0	-379.1	1,459.8	1,502.1	0.00	0.00	0.00
5,300.0	19.53	104.56	5,042.9	-384.7	1,481.4	1,524.4	0.00	0.00	0.00
5,400.0	19.53	104.56	5,137.2	-393.1	1,513.8	1,557.7	0.00	0.00	0.00
5,500.0	19.53	104.56	5,231.4	-401.5	1,546.1	1,591.0	0.00	0.00	0.00
5,600.0	19.53	104.56	5,325.7	-410.0	1,578.5	1,624.3	0.00	0.00	0.00
5,700.0	19.53	104.56	5,419.9	-418.4	1,610.8	1,657.6	0.00	0.00	0.00
5,800.0	19.53	104.56	5,514.2	-426.8	1,643.2	1,690.9	0.00	0.00	0.00
5,900.0	19.53	104.56	5,608.4	-435.2	1,675.6	1,724.2	0.00	0.00	0.00
6,000.0	19.53	104.56	5,702.6	-443.6	1,707.9	1,757.5	0.00	0.00	0.00
6,100.0	19.53	104.56	5,796.9	-452.0	1,740.3	1,790.8	0.00	0.00	0.00
6,200.0	19.53	104.56	5,891.1	-460.4	1,772.6	1,824.1	0.00	0.00	0.00
6,300.0	19.53	104.56	5,985.4	-468.8	1,805.0	1,857.4	0.00	0.00	0.00
6,400.0	19.53	104.56	6,079.6	-477.2	1,837.4	1,890.7	0.00	0.00	0.00
6,500.0	19.53	104.56	6,173.9	-485.6	1,869.7	1,924.0	0.00	0.00	0.00
6,600.0	19.53	104.56	6,268.1	-494.0	1,902.1	1,957.3	0.00	0.00	0.00
6,700.0	19.53	104.56	6,362.4	-502.4	1,934.5	1,990.6	0.00	0.00	0.00
6,800.0	19.53	104.56	6,456.6	-510.8	1,966.8	2,023.9	0.00	0.00	0.00
<b>Ohio Creek</b>									
6,860.9	19.53	104.56	6,514.0	-515.9	1,986.5	2,044.1	0.00	0.00	0.00
6,900.0	19.53	104.56	6,550.8	-519.2	1,999.2	2,057.2	0.00	0.00	0.00
7,000.0	19.53	104.56	6,645.1	-527.6	2,031.5	2,090.5	0.00	0.00	0.00
<b>Williams Fork</b>									
7,060.4	19.53	104.56	6,702.0	-532.7	2,051.1	2,110.6	0.00	0.00	0.00
7,100.0	19.53	104.56	6,739.3	-536.0	2,063.9	2,123.8	0.00	0.00	0.00
<b>Drop 3° / 100'</b>									
7,153.2	19.53	104.56	6,789.4	-540.5	2,081.1	2,141.5	0.00	0.00	0.00
7,200.0	18.13	104.56	6,833.8	-544.3	2,095.7	2,156.5	3.00	-3.00	0.00
7,300.0	15.13	104.56	6,929.6	-551.5	2,123.4	2,185.0	3.00	-3.00	0.00
7,400.0	12.13	104.56	7,026.8	-557.4	2,146.2	2,208.5	3.00	-3.00	0.00
7,500.0	9.13	104.56	7,125.0	-562.0	2,164.1	2,226.8	3.00	-3.00	0.00
7,600.0	6.13	104.56	7,224.1	-565.4	2,176.9	2,240.1	3.00	-3.00	0.00
7,700.0	3.13	104.56	7,323.8	-567.4	2,184.7	2,248.1	3.00	-3.00	0.00
<b>EOD @ Vertical - TOG</b>									
7,804.3	0.00	0.00	7,428.0	-568.1	2,187.5	2,250.9	3.00	-3.00	0.00
7,900.0	0.00	0.00	7,523.7	-568.1	2,187.5	2,250.9	0.00	0.00	0.00
8,000.0	0.00	0.00	7,623.7	-568.1	2,187.5	2,250.9	0.00	0.00	0.00
8,100.0	0.00	0.00	7,723.7	-568.1	2,187.5	2,250.9	0.00	0.00	0.00
8,200.0	0.00	0.00	7,823.7	-568.1	2,187.5	2,250.9	0.00	0.00	0.00
8,300.0	0.00	0.00	7,923.7	-568.1	2,187.5	2,250.9	0.00	0.00	0.00
8,400.0	0.00	0.00	8,023.7	-568.1	2,187.5	2,250.9	0.00	0.00	0.00
8,500.0	0.00	0.00	8,123.7	-568.1	2,187.5	2,250.9	0.00	0.00	0.00
8,600.0	0.00	0.00	8,223.7	-568.1	2,187.5	2,250.9	0.00	0.00	0.00



# Well Planning Report



<b>Database:</b>	EDM 5000 1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well CC 697-10-03E
<b>Company:</b>	Laramie Energy, LLC	<b>TVD Reference:</b>	RKB @ 8625.0usft (H&P #522)
<b>Project:</b>	Garfield County, CO	<b>MD Reference:</b>	RKB @ 8625.0usft (H&P #522)
<b>Site:</b>	CC 610-21-41 Pad	<b>North Reference:</b>	True
<b>Well:</b>	CC 697-10-03E	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #2		

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	8,323.7	-568.1	2,187.5	2,250.9	0.00	0.00	0.00
8,800.0	0.00	0.00	8,423.7	-568.1	2,187.5	2,250.9	0.00	0.00	0.00
8,900.0	0.00	0.00	8,523.7	-568.1	2,187.5	2,250.9	0.00	0.00	0.00
9,000.0	0.00	0.00	8,623.7	-568.1	2,187.5	2,250.9	0.00	0.00	0.00
9,100.0	0.00	0.00	8,723.7	-568.1	2,187.5	2,250.9	0.00	0.00	0.00
9,200.0	0.00	0.00	8,823.7	-568.1	2,187.5	2,250.9	0.00	0.00	0.00
9,300.0	0.00	0.00	8,923.7	-568.1	2,187.5	2,250.9	0.00	0.00	0.00
<b>Cameo</b>									
9,328.3	0.00	0.00	8,952.0	-568.1	2,187.5	2,250.9	0.00	0.00	0.00
9,400.0	0.00	0.00	9,023.7	-568.1	2,187.5	2,250.9	0.00	0.00	0.00
9,500.0	0.00	0.00	9,123.7	-568.1	2,187.5	2,250.9	0.00	0.00	0.00
9,600.0	0.00	0.00	9,223.7	-568.1	2,187.5	2,250.9	0.00	0.00	0.00
<b>Base Cameo Coal</b>									
9,695.3	0.00	0.00	9,319.0	-568.1	2,187.5	2,250.9	0.00	0.00	0.00
9,700.0	0.00	0.00	9,323.7	-568.1	2,187.5	2,250.9	0.00	0.00	0.00
<b>Rollins</b>									
9,741.3	0.00	0.00	9,365.0	-568.1	2,187.5	2,250.9	0.00	0.00	0.00
9,800.0	0.00	0.00	9,423.7	-568.1	2,187.5	2,250.9	0.00	0.00	0.00
9,900.0	0.00	0.00	9,523.7	-568.1	2,187.5	2,250.9	0.00	0.00	0.00
<b>TD @ 9991.3' MD / 9615.0' TVD</b>									
9,991.3	0.00	0.00	9,615.0	-568.1	2,187.5	2,250.9	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 697-10-03	0.00	0.00	9,615.0	-568.1	2,187.5	1,633,948.76	2,238,888.58	39.542930	-108.199256
- plan hits target center									
- Circle (radius 50.0)									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
2,530.0	2,432.3	9 5/8"	9-5/8	14-1/2	
9,991.3	9,615.0	4 1/2"	4-1/2	8-3/4	





## Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CC 697-10-03E
Company:	Laramie Energy, LLC	TVD Reference:	RKB @ 8625.0usft (H&P #522)
Project:	Garfield County, CO	MD Reference:	RKB @ 8625.0usft (H&P #522)
Site:	CC 610-21-41 Pad	North Reference:	True
Well:	CC 697-10-03E	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

### Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,023.0	1,012.0	Mahogany			
3,111.1	2,980.0	Wasatch			
5,010.4	4,770.0	Wasatch 'G' Sand			
5,233.2	4,980.0	Fort Union			
6,860.9	6,514.0	Ohio Creek			
7,060.4	6,702.0	Williams Fork			
7,804.3	7,428.0	TOG			
9,328.3	8,952.0	Cameo			
9,695.3	9,319.0	Base Cameo Coal			
9,741.3	9,365.0	Rollins			

### Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
400.0	400.0	0.0	0.0	KOP (Build 3° / 100')
1,051.1	1,038.6	-27.6	106.4	EOB @ 19.53° Inc. / 104.56° Azm
7,153.2	6,789.4	-540.5	2,081.1	Drop 3° / 100'
7,804.3	7,428.0	-568.1	2,187.5	EOD @ Vertical
9,991.3	9,615.0	-568.1	2,187.5	TD @ 9991.3' MD / 9615.0' TVD