

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



Project: Garfield County, CO
 Site: CC 604-12-13 Pad
 Well: CC 0697-04-07W
 Wellbore: A-9
 Design: Design #4
 Latitude: 39.553328
 Longitude: -108.233324
 Ground Level: 8529.0
 WELL @ 8559.0usft (H&P #522)



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')	
400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.0	EOB @ 10.00" Inc. / 7.50" Azm	
733.3	10.00	7.50	731.8	28.8	3.8	3.00	7.50	28.8	Build 3" / 100'	
1083.3	10.00	7.50	1078.3	88.0	11.7	0.00	0.00	82.3	EOB @ 19.74" Inc. / 32.44" Azm	
1464.9	19.74	32.44	1445.0	178.6	60.7	3.00	45.86	177.5	Drop 3" / 100'	
6832.2	19.74	32.44	6496.8	1708.8	1023.3	0.00	0.00	1980.1	EOO @ Vertical	
7490.4	0.00	0.00	7142.0	1801.6	1083.5	3.00	180.00	2102.3	TD @ 10208.4' MD / 9860.0' TVD	
10208.4	0.00	0.00	9860.0	1801.6	1083.5	0.00	0.00	2102.3		

DESIGN TARGET DETAILS							
Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
PBHL - CC 0697-04-07W	9860.0	1801.6	1083.5	1639788.87	2230538.46	39.558274	-108.229481

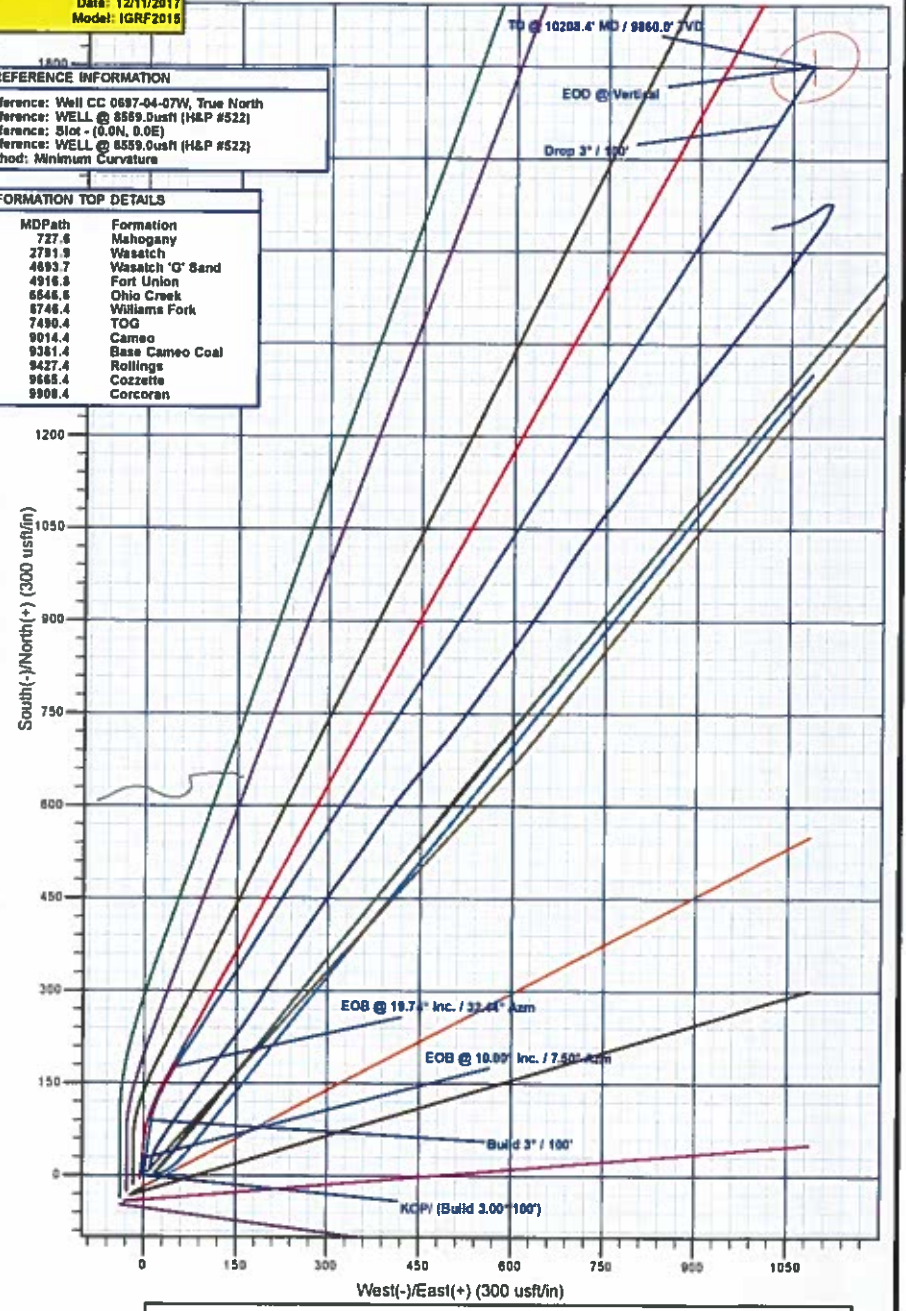
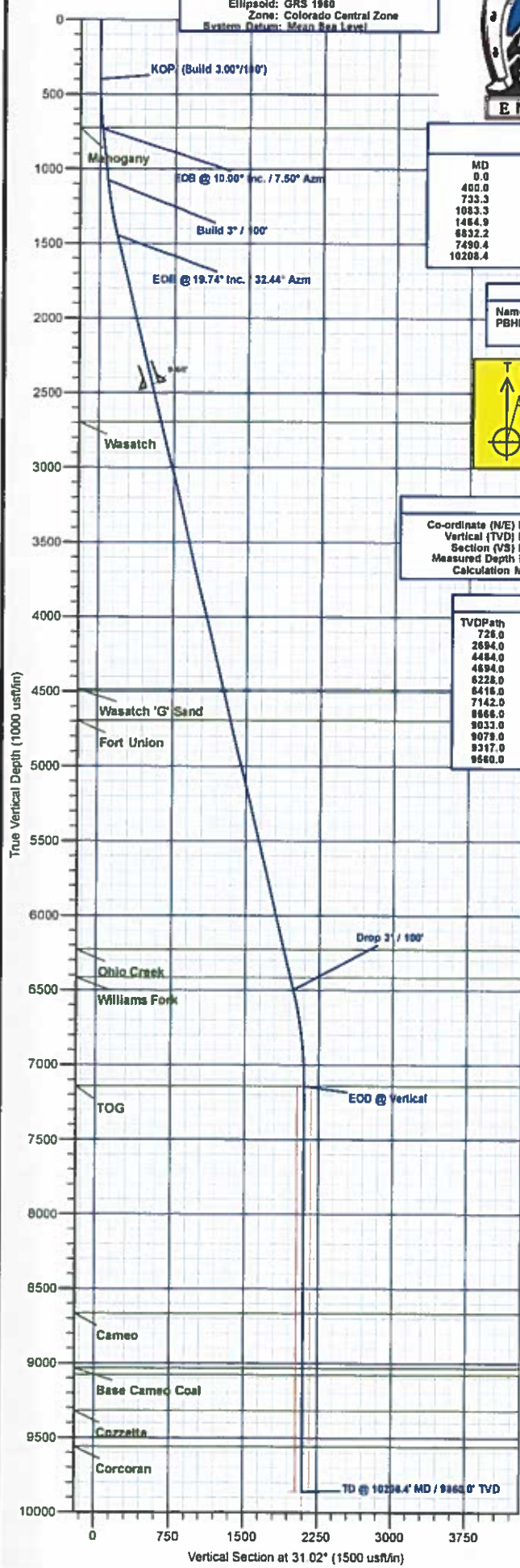
Azimuths to True North
 Magnetic North: 9.78°

Magnetic Field
 Strength: 51455.2snT
 Dip Angle: 65.58°
 Date: 12/11/2017
 Model: IGRF2015

WELL DETAILS: CC 0697-04-07W				
+N-S	+E-W	Northing	GL: 8529.0 Easting	Latitude
0.0	0.0	1636021.69	2229399.22	39.553328
				Longitude -108.233324

REFERENCE INFORMATION
 Co-ordinate (N/E) Reference: Well CC 0697-04-07W, True North
 Vertical (TVD) Reference: WELL @ 8559.0usft (H&P #522)
 Section (VS) Reference: Slope - (0.0N, 0.0E)
 Measured Depth Reference: WELL @ 8559.0usft (H&P #522)
 Calculation Method: Minimum Curvature

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
726.0	727.6	Mahogany
2694.0	2791.9	Wasatch
4484.0	4693.7	Wasatch 'G' Sand
4694.0	4916.8	Fort Union
6228.0	6546.6	Ohio Creek
6418.0	6746.4	Williams Fork
7142.0	7490.4	TOG
8666.0	9014.4	Cameo
9033.0	9381.4	Base Cameo Coal
9078.0	9427.4	Rollings
9317.0	9668.4	Cozzette
9580.0	9908.4	Corcoran





Laramie Energy, LLC

Garfield County, CO

CC 604-12-13 Pad

CC 0697-04-07W

A-9

Plan: Design #4

QES Well Planning Report

15 February, 2019





Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CC 0697-04-07W
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 0697-04-07W	Survey Calculation Method:	Minimum Curvature
Wellbore:	A-9		
Design:	Design #4		

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 0697-04-07W			
Well Position	+N/-S	-10.2 usft	Northing:	1,638,021.68 usft
	+E/-W	-11.0 usft	Easting:	2,229,399.22 usft
Position Uncertainty	0.0 usft		Wellhead Elevation:	
			Ground Level:	8,529.0 usft

Wellbore	A-9				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	12/11/2017	9.76	65.58	51,455.24708818

Design	Design #4			
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	31.02

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	
400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.00	0.00	
733.3	10.00	7.50	731.6	28.8	3.8	3.00	3.00	0.00	7.50	
1,083.3	10.00	7.50	1,076.3	89.0	11.7	0.00	0.00	0.00	0.00	
1,464.9	19.74	32.44	1,445.0	176.6	50.7	3.00	2.55	6.53	45.86	
6,832.2	19.74	32.44	6,496.8	1,706.8	1,023.3	0.00	0.00	0.00	0.00	
7,490.4	0.00	0.00	7,142.0	1,801.6	1,083.5	3.00	-3.00	0.00	180.00	
10,208.4	0.00	0.00	9,860.0	1,801.6	1,083.5	0.00	0.00	0.00	0.00	PBHL - CC 0697-04



Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CC 0697-04-07W
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 0697-04-07W	Survey Calculation Method:	Minimum Curvature
Wellbore:	A-9		
Design:	Design #4		

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 3.00°/100°)									
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	3.00	7.50	500.0	2.6	0.3	2.4	3.00	3.00	0.00
600.0	6.00	7.50	599.6	10.4	1.4	9.6	3.00	3.00	0.00
700.0	9.00	7.50	698.8	23.3	3.1	21.6	3.00	3.00	0.00
Mahogany									
727.6	9.83	7.50	726.0	27.8	3.7	25.7	3.00	3.00	0.00
EOB @ 10.00° Inc. / 7.50° Azm									
733.3	10.00	7.50	731.6	28.8	3.8	26.6	3.00	3.00	0.00
800.0	10.00	7.50	797.3	40.2	5.3	37.2	0.00	0.00	0.00
900.0	10.00	7.50	895.8	57.5	7.6	53.1	0.00	0.00	0.00
1,000.0	10.00	7.50	994.3	74.7	9.8	69.1	0.00	0.00	0.00
Build 3° / 100'									
1,083.3	10.00	7.50	1,076.3	89.0	11.7	82.3	0.00	0.00	0.00
1,100.0	10.35	9.50	1,092.7	91.9	12.2	85.0	3.00	2.13	11.98
1,200.0	12.69	19.01	1,190.7	111.2	17.2	104.2	3.00	2.33	9.51
1,300.0	15.25	25.49	1,287.8	133.4	26.5	128.0	3.00	2.56	6.48
1,400.0	17.95	30.11	1,383.6	158.6	39.8	156.5	3.00	2.70	4.62
EOB @ 19.74° Inc. / 32.44° Azm									
1,464.9	19.74	32.44	1,445.0	176.6	50.7	177.5	3.00	2.77	3.59
1,500.0	19.74	32.44	1,478.0	186.6	57.1	189.3	0.00	0.00	0.00
1,600.0	19.74	32.44	1,572.2	215.1	75.2	223.1	0.00	0.00	0.00
1,700.0	19.74	32.44	1,666.3	243.6	93.3	256.8	0.00	0.00	0.00
1,800.0	19.74	32.44	1,760.4	272.1	111.5	290.6	0.00	0.00	0.00
1,900.0	19.74	32.44	1,854.5	300.6	129.6	324.4	0.00	0.00	0.00
2,000.0	19.74	32.44	1,948.6	329.1	147.7	358.2	0.00	0.00	0.00
2,100.0	19.74	32.44	2,042.8	357.6	165.8	391.9	0.00	0.00	0.00
2,200.0	19.74	32.44	2,136.9	386.1	183.9	425.7	0.00	0.00	0.00
2,300.0	19.74	32.44	2,231.0	414.6	202.1	459.5	0.00	0.00	0.00
2,400.0	19.74	32.44	2,325.1	443.2	220.2	493.2	0.00	0.00	0.00
2,500.0	19.74	32.44	2,419.3	471.7	238.3	527.0	0.00	0.00	0.00
9-5/8'									
2,530.0	19.74	32.44	2,447.5	480.2	243.7	537.1	0.00	0.00	0.00
2,600.0	19.74	32.44	2,513.4	500.2	256.4	560.8	0.00	0.00	0.00
2,700.0	19.74	32.44	2,607.5	528.7	274.5	594.6	0.00	0.00	0.00
Wasatch									
2,791.9	19.74	32.44	2,694.0	554.9	291.2	625.6	0.00	0.00	0.00
2,800.0	19.74	32.44	2,701.6	557.2	292.7	628.3	0.00	0.00	0.00
2,900.0	19.74	32.44	2,795.7	585.7	310.8	662.1	0.00	0.00	0.00
3,000.0	19.74	32.44	2,889.9	614.2	328.9	695.9	0.00	0.00	0.00
3,100.0	19.74	32.44	2,984.0	642.7	347.0	729.6	0.00	0.00	0.00
3,200.0	19.74	32.44	3,078.1	671.2	365.1	763.4	0.00	0.00	0.00
3,300.0	19.74	32.44	3,172.2	699.8	383.3	797.2	0.00	0.00	0.00
3,400.0	19.74	32.44	3,266.3	728.3	401.4	831.0	0.00	0.00	0.00
3,500.0	19.74	32.44	3,360.5	756.8	419.5	864.7	0.00	0.00	0.00
3,600.0	19.74	32.44	3,454.6	785.3	437.6	898.5	0.00	0.00	0.00
3,700.0	19.74	32.44	3,548.7	813.8	455.7	932.3	0.00	0.00	0.00
3,800.0	19.74	32.44	3,642.8	842.3	473.9	966.0	0.00	0.00	0.00
3,900.0	19.74	32.44	3,737.0	870.8	492.0	999.8	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 604-12-13 Pad
 Well: CC 0697-04-07W
 Wellbore: A-9
 Design: Design #4

Local Co-ordinate Reference: Well CC 0697-04-07W
 TVD Reference: WELL @ 8559.0usft (H&P #522)
 MD Reference: WELL @ 8559.0usft (H&P #522)
 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)
4,000.0	19.74	32.44	3,831.1	899.3	510.1	1,033.6	0.00	0.00	0.00
4,100.0	19.74	32.44	3,925.2	927.8	528.2	1,067.4	0.00	0.00	0.00
4,200.0	19.74	32.44	4,019.3	956.4	546.3	1,101.1	0.00	0.00	0.00
4,300.0	19.74	32.44	4,113.4	984.9	564.5	1,134.9	0.00	0.00	0.00
4,400.0	19.74	32.44	4,207.6	1,013.4	582.6	1,168.7	0.00	0.00	0.00
4,500.0	19.74	32.44	4,301.7	1,041.9	600.7	1,202.4	0.00	0.00	0.00
4,600.0	19.74	32.44	4,395.8	1,070.4	618.8	1,236.2	0.00	0.00	0.00
Wasatch 'G' Sand									
4,693.7	19.74	32.44	4,484.0	1,097.1	635.8	1,267.9	0.00	0.00	0.00
4,700.0	19.74	32.44	4,489.9	1,098.9	636.9	1,270.0	0.00	0.00	0.00
4,800.0	19.74	32.44	4,584.0	1,127.4	655.1	1,303.8	0.00	0.00	0.00
4,900.0	19.74	32.44	4,678.2	1,155.9	673.2	1,337.5	0.00	0.00	0.00
Fort Union									
4,916.8	19.74	32.44	4,694.0	1,160.7	676.2	1,343.2	0.00	0.00	0.00
5,000.0	19.74	32.44	4,772.3	1,184.4	691.3	1,371.3	0.00	0.00	0.00
5,100.0	19.74	32.44	4,866.4	1,213.0	709.4	1,405.1	0.00	0.00	0.00
5,200.0	19.74	32.44	4,960.5	1,241.5	727.5	1,438.9	0.00	0.00	0.00
5,300.0	19.74	32.44	5,054.6	1,270.0	745.7	1,472.6	0.00	0.00	0.00
5,400.0	19.74	32.44	5,148.8	1,298.5	763.8	1,506.4	0.00	0.00	0.00
5,500.0	19.74	32.44	5,242.9	1,327.0	781.9	1,540.2	0.00	0.00	0.00
5,600.0	19.74	32.44	5,337.0	1,355.5	800.0	1,573.9	0.00	0.00	0.00
5,700.0	19.74	32.44	5,431.1	1,384.0	818.1	1,607.7	0.00	0.00	0.00
5,800.0	19.74	32.44	5,525.3	1,412.5	836.3	1,641.5	0.00	0.00	0.00
5,900.0	19.74	32.44	5,619.4	1,441.0	854.4	1,675.3	0.00	0.00	0.00
6,000.0	19.74	32.44	5,713.5	1,469.6	872.5	1,709.0	0.00	0.00	0.00
6,100.0	19.74	32.44	5,807.6	1,498.1	890.6	1,742.8	0.00	0.00	0.00
6,200.0	19.74	32.44	5,901.7	1,526.6	908.7	1,776.6	0.00	0.00	0.00
6,300.0	19.74	32.44	5,995.9	1,555.1	926.9	1,810.3	0.00	0.00	0.00
6,400.0	19.74	32.44	6,090.0	1,583.6	945.0	1,844.1	0.00	0.00	0.00
6,500.0	19.74	32.44	6,184.1	1,612.1	963.1	1,877.9	0.00	0.00	0.00
Ohio Creek									
6,546.6	19.74	32.44	6,228.0	1,625.4	971.6	1,893.6	0.00	0.00	0.00
6,600.0	19.74	32.44	6,278.2	1,640.6	981.2	1,911.7	0.00	0.00	0.00
6,700.0	19.74	32.44	6,372.3	1,669.1	999.3	1,945.4	0.00	0.00	0.00
Williams Fork									
6,746.4	19.74	32.44	6,416.0	1,682.4	1,007.8	1,961.1	0.00	0.00	0.00
6,800.0	19.74	32.44	6,466.5	1,697.6	1,017.5	1,979.2	0.00	0.00	0.00
Drop 3° / 100'									
6,832.2	19.74	32.44	6,496.8	1,706.8	1,023.3	1,990.1	0.00	0.00	0.00
6,900.0	17.71	32.44	6,561.0	1,725.2	1,035.0	2,011.8	3.00	-3.00	0.00
7,000.0	14.71	32.44	6,657.0	1,748.8	1,050.0	2,039.7	3.00	-3.00	0.00
7,100.0	11.71	32.44	6,754.3	1,768.0	1,062.2	2,062.6	3.00	-3.00	0.00
7,200.0	8.71	32.44	6,852.7	1,783.0	1,071.7	2,080.3	3.00	-3.00	0.00
7,300.0	5.71	32.44	6,951.9	1,793.6	1,078.5	2,092.9	3.00	-3.00	0.00
7,400.0	2.71	32.44	7,051.7	1,799.8	1,082.4	2,100.2	3.00	-3.00	0.00
EOD @ Vertical - TOG									
7,490.4	0.00	0.00	7,142.0	1,801.6	1,083.5	2,102.3	3.00	-3.00	0.00
7,500.0	0.00	0.00	7,151.6	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
7,600.0	0.00	0.00	7,251.6	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
7,700.0	0.00	0.00	7,351.6	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
7,800.0	0.00	0.00	7,451.6	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
7,900.0	0.00	0.00	7,551.6	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
8,000.0	0.00	0.00	7,651.6	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00



Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CC 0697-04-07W
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 0697-04-07W	Survey Calculation Method:	Minimum Curvature
Wellbore:	A-9		
Design:	Design #4		

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)
8,100.0	0.00	0.00	7,751.6	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
8,200.0	0.00	0.00	7,851.6	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
8,300.0	0.00	0.00	7,951.6	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
8,400.0	0.00	0.00	8,051.6	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
8,500.0	0.00	0.00	8,151.6	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
8,600.0	0.00	0.00	8,251.6	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
8,700.0	0.00	0.00	8,351.6	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
8,800.0	0.00	0.00	8,451.6	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
8,900.0	0.00	0.00	8,551.6	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
9,000.0	0.00	0.00	8,651.6	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
Cameo									
9,014.4	0.00	0.00	8,666.0	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
9,100.0	0.00	0.00	8,751.6	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
9,200.0	0.00	0.00	8,851.6	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
9,300.0	0.00	0.00	8,951.6	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
Base Cameo Coal									
9,381.4	0.00	0.00	9,033.0	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
9,400.0	0.00	0.00	9,051.6	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
Rollings									
9,427.4	0.00	0.00	9,079.0	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
9,500.0	0.00	0.00	9,151.6	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
9,600.0	0.00	0.00	9,251.6	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
Cozzette									
9,665.4	0.00	0.00	9,317.0	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
9,700.0	0.00	0.00	9,351.6	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
9,800.0	0.00	0.00	9,451.6	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
9,900.0	0.00	0.00	9,551.6	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
Corcoran									
9,908.4	0.00	0.00	9,560.0	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
10,000.0	0.00	0.00	9,651.6	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
10,100.0	0.00	0.00	9,751.6	1,801.6	1,083.5	2,102.3	0.00	0.00	0.00
TD @ 10208.4' MD / 9860.0' TVD									
10,208.4	0.00	0.00	9,860.0	1,801.6	1,083.5	2,102.3	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 0697-04-0	0.00	0.00	9,860.0	1,801.6	1,083.5	1,639,789.87	2,230,536.46	39.558274	-108.229481
- 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	2,447.5	9-5/8'	9-5/8	14-1/2



Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CC 0697-04-07W
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 0697-04-07W	Survey Calculation Method:	Minimum Curvature
Wellbore:	A-9		
Design:	Design #4		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
727.6	726.0	Mahogany				
2,791.9	2,694.0	Wasatch				
4,693.7	4,484.0	Wasatch 'G' Sand				
4,916.8	4,694.0	Fort Union				
6,546.6	6,228.0	Ohio Creek				
6,746.4	6,416.0	Williams Fork				
7,490.4	7,142.0	TOG				
9,014.4	8,666.0	Cameo				
9,381.4	9,033.0	Base Cameo Coal				
9,427.4	9,079.0	Rollings				
9,665.4	9,317.0	Cozzette		0.00		
9,908.4	9,560.0	Corcoran		0.00		

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
400.0	400.0	0.0	0.0	KOP/ (Build 3.00°/100')	
733.3	731.6	28.8	3.8	EOB @ 10.00° Inc. / 7.50° Azm	
1,083.3	1,076.3	89.0	11.7	Build 3° / 100'	
1,464.9	1,445.0	176.6	50.7	EOB @ 19.74° Inc. / 32.44° Azm	
6,832.2	6,496.8	1,706.8	1,023.3	Drop 3° / 100'	
7,490.4	7,142.0	1,801.6	1,083.5	EOD @ Vertical	
10,208.4	9,860.0	1,801.6	1,083.5	TD @ 10208.4' MD / 9860.0' TVD	