



Laramie Energy, LLC

Mesa County, CO

BCU 14L Pad

Laramie BCU 0993-14-14W - Slot A-4

OH

Plan: Design #2

KLX Well Planning Report

03 November, 2022





Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Laramie BCU 0993-14-14W - Slot A-4
Company:	Laramie Energy, LLC	TVD Reference:	RKB @ 7418.0usft (24')
Project:	Mesa County, CO	MD Reference:	RKB @ 7418.0usft (24')
Site:	BCU 14L Pad	North Reference:	True
Well:	Laramie BCU 0993-14-14W	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Design #2		

Project	Mesa 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		BCU 14L Pad				
Site Position:		Northing:	1,532,073.37 usft	Latitude:	39.272724	
From:	Lat/Long	Easting:	2,364,612.88 usft	Longitude:	-107.744654	
Position Uncertainty:		0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.42 °

Well	Laramie BCU 0993-14-14W - Slot A-4					
Well Position	+N/-S	-6.6 usft	Northing:	1,532,067.53 usft	Latitude:	39.272706
	+E/-W	-29.2 usft	Easting:	2,364,583.57 usft	Longitude:	-107.744757
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	7,394.0 usft

Wellbore	OH
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM2019	12/31/2019	8.97	65.18	51,189.50000000

Design	Design #2
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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	106.66

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	
250.0	0.00	0.00	250.0	0.0	0.0	0.00	0.00	0.00	0.00	
530.0	7.00	155.00	529.3	-15.5	7.2	2.50	2.50	0.00	155.00	
1,237.9	21.44	105.28	1,215.5	-89.3	151.4	2.50	2.04	-7.02	-66.53	
5,590.9	21.44	105.28	5,267.4	-508.5	1,686.1	0.00	0.00	0.00	0.00	
6,448.4	0.00	0.00	6,105.0	-550.3	1,839.0	2.50	-2.50	0.00	180.00	
8,198.4	0.00	0.00	7,855.0	-550.3	1,839.0	0.00	0.00	0.00	0.00	BHL - 14-14W



Well Planning Report



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Project:	Mesa County, CO	MD Reference:	RKB @ 7418.0usft (24')
Site:	BCU 14L Pad	North Reference:	True
Well:	Laramie BCU 0993-14-14W	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
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
KOP @ (Build 2.5° / 100)									
250.0	0.00	0.00	250.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	1.25	155.00	300.0	-0.5	0.2	0.4	2.50	2.50	0.00
400.0	3.75	155.00	399.9	-4.4	2.1	3.3	2.50	2.50	0.00
500.0	6.25	155.00	499.5	-12.3	5.8	9.1	2.50	2.50	0.00
EOB @ 7.00° Inc. / 155.00° Azm									
530.0	7.00	155.00	529.3	-15.5	7.2	11.4	2.50	2.50	0.00
600.0	7.86	143.18	598.7	-23.2	11.9	18.0	2.50	1.23	-16.88
700.0	9.52	130.74	697.6	-34.1	22.3	31.1	2.50	1.66	-12.44
800.0	11.49	122.23	795.9	-44.8	37.0	48.2	2.50	1.97	-8.51
900.0	13.63	116.27	893.5	-55.3	55.9	69.5	2.50	2.14	-5.96
1,000.0	15.87	111.93	990.2	-65.6	79.2	94.7	2.50	2.24	-4.34
1,100.0	18.18	108.66	1,085.8	-75.7	106.7	123.9	2.50	2.31	-3.27
1,200.0	20.54	106.10	1,180.2	-85.6	138.3	157.0	2.50	2.35	-2.55
EOB @ 21.44° Inc. / 105.28° Azm									
1,237.9	21.44	105.28	1,215.5	-89.3	151.4	170.6	2.50	2.38	-2.18
1,300.0	21.44	105.28	1,273.3	-95.2	173.3	193.3	0.00	0.00	0.00
1,400.0	21.44	105.28	1,366.4	-104.9	208.5	229.8	0.00	0.00	0.00
8 5/8"									
1,500.0	21.44	105.28	1,459.5	-114.5	243.8	266.4	0.00	0.00	0.00
1,600.0	21.44	105.28	1,552.6	-124.1	279.1	302.9	0.00	0.00	0.00
1,700.0	21.44	105.28	1,645.7	-133.8	314.3	339.5	0.00	0.00	0.00
1,800.0	21.44	105.28	1,738.8	-143.4	349.6	376.0	0.00	0.00	0.00
1,900.0	21.44	105.28	1,831.8	-153.0	384.8	412.5	0.00	0.00	0.00
2,000.0	21.44	105.28	1,924.9	-162.7	420.1	449.1	0.00	0.00	0.00
2,100.0	21.44	105.28	2,018.0	-172.3	455.3	485.6	0.00	0.00	0.00
2,200.0	21.44	105.28	2,111.1	-181.9	490.6	522.1	0.00	0.00	0.00
2,300.0	21.44	105.28	2,204.2	-191.5	525.8	558.7	0.00	0.00	0.00
2,400.0	21.44	105.28	2,297.2	-201.2	561.1	595.2	0.00	0.00	0.00
2,500.0	21.44	105.28	2,390.3	-210.8	596.4	631.8	0.00	0.00	0.00
2,600.0	21.44	105.28	2,483.4	-220.4	631.6	668.3	0.00	0.00	0.00
2,700.0	21.44	105.28	2,576.5	-230.1	666.9	704.8	0.00	0.00	0.00
Wasatch 'G' Sand									
2,752.1	21.44	105.28	2,625.0	-235.1	685.2	723.9	0.00	0.00	0.00
2,800.0	21.44	105.28	2,669.6	-239.7	702.1	741.4	0.00	0.00	0.00
2,900.0	21.44	105.28	2,762.7	-249.3	737.4	777.9	0.00	0.00	0.00
3,000.0	21.44	105.28	2,855.7	-259.0	772.6	814.4	0.00	0.00	0.00
3,100.0	21.44	105.28	2,948.8	-268.6	807.9	851.0	0.00	0.00	0.00
3,200.0	21.44	105.28	3,041.9	-278.2	843.2	887.5	0.00	0.00	0.00
3,300.0	21.44	105.28	3,135.0	-287.9	878.4	924.1	0.00	0.00	0.00
Fort Union									
3,383.8	21.44	105.28	3,213.0	-295.9	908.0	954.7	0.00	0.00	0.00
3,400.0	21.44	105.28	3,228.1	-297.5	913.7	960.6	0.00	0.00	0.00
3,500.0	21.44	105.28	3,321.1	-307.1	948.9	997.1	0.00	0.00	0.00
3,600.0	21.44	105.28	3,414.2	-316.7	984.2	1,033.7	0.00	0.00	0.00
3,700.0	21.44	105.28	3,507.3	-326.4	1,019.4	1,070.2	0.00	0.00	0.00
3,800.0	21.44	105.28	3,600.4	-336.0	1,054.7	1,106.7	0.00	0.00	0.00
3,900.0	21.44	105.28	3,693.5	-345.6	1,089.9	1,143.3	0.00	0.00	0.00
Lower Wasatch									
3,957.5	21.44	105.28	3,747.0	-351.2	1,110.2	1,164.3	0.00	0.00	0.00



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Site:	BCU 14L Pad	North Reference:	True
Well:	Laramie BCU 0993-14-14W	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
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)
4,000.0	21.44	105.28	3,786.6	-355.3	1,125.2	1,179.8	0.00	0.00	0.00
4,100.0	21.44	105.28	3,879.6	-364.9	1,160.5	1,216.4	0.00	0.00	0.00
4,200.0	21.44	105.28	3,972.7	-374.5	1,195.7	1,252.9	0.00	0.00	0.00
4,300.0	21.44	105.28	4,065.8	-384.2	1,231.0	1,289.4	0.00	0.00	0.00
4,400.0	21.44	105.28	4,158.9	-393.8	1,266.2	1,326.0	0.00	0.00	0.00
4,500.0	21.44	105.28	4,252.0	-403.4	1,301.5	1,362.5	0.00	0.00	0.00
4,600.0	21.44	105.28	4,345.1	-413.1	1,336.7	1,399.0	0.00	0.00	0.00
4,700.0	21.44	105.28	4,438.1	-422.7	1,372.0	1,435.6	0.00	0.00	0.00
4,800.0	21.44	105.28	4,531.2	-432.3	1,407.2	1,472.1	0.00	0.00	0.00
4,900.0	21.44	105.28	4,624.3	-441.9	1,442.5	1,508.7	0.00	0.00	0.00
Ohio Creek									
4,913.6	21.44	105.28	4,637.0	-443.3	1,447.3	1,513.6	0.00	0.00	0.00
5,000.0	21.44	105.28	4,717.4	-451.6	1,477.8	1,545.2	0.00	0.00	0.00
5,100.0	21.44	105.28	4,810.5	-461.2	1,513.0	1,581.7	0.00	0.00	0.00
5,200.0	21.44	105.28	4,903.5	-470.8	1,548.3	1,618.3	0.00	0.00	0.00
5,300.0	21.44	105.28	4,996.6	-480.5	1,583.5	1,654.8	0.00	0.00	0.00
5,400.0	21.44	105.28	5,089.7	-490.1	1,618.8	1,691.3	0.00	0.00	0.00
Williams Fork									
5,439.0	21.44	105.28	5,126.0	-493.9	1,632.5	1,705.6	0.00	0.00	0.00
5,500.0	21.44	105.28	5,182.8	-499.7	1,654.0	1,727.9	0.00	0.00	0.00
Drop 2.5° /100'									
5,590.9	21.44	105.28	5,267.4	-508.5	1,686.1	1,761.1	0.00	0.00	0.00
5,600.0	21.21	105.28	5,275.9	-509.4	1,689.3	1,764.4	2.50	-2.50	0.00
5,700.0	18.71	105.28	5,369.9	-518.4	1,722.2	1,798.5	2.50	-2.50	0.00
5,800.0	16.21	105.28	5,465.2	-526.3	1,751.1	1,828.5	2.50	-2.50	0.00
5,900.0	13.71	105.28	5,561.9	-533.1	1,776.0	1,854.3	2.50	-2.50	0.00
6,000.0	11.21	105.28	5,659.5	-538.7	1,796.9	1,875.9	2.50	-2.50	0.00
6,100.0	8.71	105.28	5,758.0	-543.3	1,813.5	1,893.2	2.50	-2.50	0.00
6,200.0	6.21	105.28	5,857.1	-546.7	1,826.1	1,906.1	2.50	-2.50	0.00
6,300.0	3.71	105.28	5,956.7	-549.0	1,834.4	1,914.8	2.50	-2.50	0.00
6,400.0	1.21	105.28	6,056.6	-550.1	1,838.5	1,919.1	2.50	-2.50	0.00
EOD @ Vertical - TOG									
6,448.4	0.00	0.00	6,105.0	-550.3	1,839.0	1,919.6	2.50	-2.50	0.00
6,500.0	0.00	0.00	6,156.6	-550.3	1,839.0	1,919.6	0.00	0.00	0.00
6,600.0	0.00	0.00	6,256.6	-550.3	1,839.0	1,919.6	0.00	0.00	0.00
6,700.0	0.00	0.00	6,356.6	-550.3	1,839.0	1,919.6	0.00	0.00	0.00
6,800.0	0.00	0.00	6,456.6	-550.3	1,839.0	1,919.6	0.00	0.00	0.00
6,900.0	0.00	0.00	6,556.6	-550.3	1,839.0	1,919.6	0.00	0.00	0.00
7,000.0	0.00	0.00	6,656.6	-550.3	1,839.0	1,919.6	0.00	0.00	0.00
7,100.0	0.00	0.00	6,756.6	-550.3	1,839.0	1,919.6	0.00	0.00	0.00
7,200.0	0.00	0.00	6,856.6	-550.3	1,839.0	1,919.6	0.00	0.00	0.00
Cameo									
7,251.4	0.00	0.00	6,908.0	-550.3	1,839.0	1,919.6	0.00	0.00	0.00
7,300.0	0.00	0.00	6,956.6	-550.3	1,839.0	1,919.6	0.00	0.00	0.00
7,400.0	0.00	0.00	7,056.6	-550.3	1,839.0	1,919.6	0.00	0.00	0.00
7,500.0	0.00	0.00	7,156.6	-550.3	1,839.0	1,919.6	0.00	0.00	0.00
7,600.0	0.00	0.00	7,256.6	-550.3	1,839.0	1,919.6	0.00	0.00	0.00
7,700.0	0.00	0.00	7,356.6	-550.3	1,839.0	1,919.6	0.00	0.00	0.00
7,800.0	0.00	0.00	7,456.6	-550.3	1,839.0	1,919.6	0.00	0.00	0.00
7,900.0	0.00	0.00	7,556.6	-550.3	1,839.0	1,919.6	0.00	0.00	0.00
Base Cameo Coal									
7,979.4	0.00	0.00	7,636.0	-550.3	1,839.0	1,919.6	0.00	0.00	0.00
Rollins									



Well Planning Report



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Project:	Mesa County, CO	MD Reference:	RKB @ 7418.0usft (24')
Site:	BCU 14L Pad	North Reference:	True
Well:	Laramie BCU 0993-14-14W	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
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)
7,998.4	0.00	0.00	7,655.0	-550.3	1,839.0	1,919.6	0.00	0.00	0.00
8,000.0	0.00	0.00	7,656.6	-550.3	1,839.0	1,919.6	0.00	0.00	0.00
8,100.0	0.00	0.00	7,756.6	-550.3	1,839.0	1,919.6	0.00	0.00	0.00
TD @ 8198.4' MD / 7855.0' TVD									
8,198.4	0.00	0.00	7,855.0	-550.3	1,839.0	1,919.6	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									
BHL - 14-14W	0.00	0.00	7,855.0	-550.3	1,839.0	1,531,472.00	2,366,408.44	39.271195	-107.738261
- plan hits target center									
- Circle (radius 65.0)									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,500.0	1,459.5	8 5/8"	8-5/8	11	
8,198.4	7,855.0	4 1/2"	4-1/2	7-7/8	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,752.1	2,625.0	Wasatch 'G' Sand			
3,383.8	3,213.0	Fort Union			
3,957.5	3,747.0	Lower Wasatch			
4,913.6	4,637.0	Ohio Creek			
5,439.0	5,126.0	Williams Fork			
6,448.4	6,105.0	TOG			
7,251.4	6,908.0	Cameo			
7,979.4	7,636.0	Base Cameo Coal			
7,998.4	7,655.0	Rollins			

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
250.0	250.0	0.0	0.0	KOP @ (Build 2.5° / 100)
530.0	529.3	-15.5	7.2	EOB @ 7.00° Inc. / 155.00° Azm
1,237.9	1,215.5	-89.3	151.4	EOB @ 21.44° Inc. / 105.28° Azm
5,590.9	5,267.4	-508.5	1,686.1	Drop 2.5° /100'
6,448.4	6,105.0	-550.3	1,839.0	EOD @ Vertical
8,198.4	7,855.0	-550.3	1,839.0	TD @ 8198.4' MD / 7855.0' TVD