



# **Laramie Energy, LLC**

**Mesa County, CO**

**BCU 14L Pad**

**Laramie BCU 0993-14-16W - Slot A-9**

**OH**

**Plan: Design #2**

## **KLX Well Planning Report**

**03 November, 2022**





# Well Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well Laramie BCU 0993-14-16W - Slot A-9
<b>Company:</b>	Laramie Energy, LLC	<b>TVD Reference:</b>	RKB @ 7418.0usft (Ensign #157)
<b>Project:</b>	Mesa County, CO	<b>MD Reference:</b>	RKB @ 7418.0usft (Ensign #157)
<b>Site:</b>	BCU 14L Pad	<b>North Reference:</b>	True
<b>Well:</b>	Laramie BCU 0993-14-16W	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	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 0993-14-16W - Slot A-9					
Well Position	+N/-S	-17.5 usft	Northing:	1,532,057.82 usft	Latitude:	39.272676
	+E/-W	-78.1 usft	Easting:	2,364,534.33 usft	Longitude:	-107.744930
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	7,394.0 usft

<b>Wellbore</b>	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

<b>Design</b>	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	152.57

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	
275.0	0.00	0.00	275.0	0.0	0.0	0.00	0.00	0.00	0.00	
555.0	7.00	170.00	554.3	-16.8	3.0	2.50	2.50	0.00	170.00	
851.5	13.76	152.09	845.9	-65.9	22.6	2.50	2.28	-6.04	-34.54	
5,700.7	13.76	152.09	5,555.8	-1,085.1	562.6	0.00	0.00	0.00	0.00	
6,251.1	0.00	0.00	6,101.0	-1,143.3	593.4	2.50	-2.50	0.00	180.00	
8,001.1	0.00	0.00	7,851.0	-1,143.3	593.4	0.00	0.00	0.00	0.00	BHL - 14-16W



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<b>Project:</b>	Mesa County, CO	<b>MD Reference:</b>	RKB @ 7418.0usft (Ensign #157)
<b>Site:</b>	BCU 14L Pad	<b>North Reference:</b>	True
<b>Well:</b>	Laramie BCU 0993-14-16W	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<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)
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
<b>Build 2.5° / 100'</b>									
275.0	0.00	0.00	275.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.63	170.00	300.0	-0.1	0.0	0.1	2.50	2.50	0.00
400.0	3.13	170.00	399.9	-3.4	0.6	3.3	2.50	2.50	0.00
500.0	5.63	170.00	499.6	-10.9	1.9	10.5	2.50	2.50	0.00
<b>EOB @ 7.00° Inc. / 170.00° Azm / Build 2.5° / 100'</b>									
555.0	7.00	170.00	554.3	-16.8	3.0	16.3	2.50	2.50	0.00
600.0	7.95	165.38	598.9	-22.5	4.2	22.0	2.50	2.12	-10.26
700.0	10.19	158.31	697.7	-37.5	9.2	37.5	2.50	2.24	-7.07
800.0	12.53	153.81	795.7	-55.4	17.3	57.2	2.50	2.34	-4.50
<b>EOB @ 13.76° Inc. / 152.09° Azm</b>									
851.5	13.76	152.09	845.9	-65.9	22.6	68.9	2.50	2.38	-3.35
900.0	13.76	152.09	893.0	-76.0	28.0	80.4	0.00	0.00	0.00
1,000.0	13.76	152.09	990.1	-97.1	39.2	104.2	0.00	0.00	0.00
1,100.0	13.76	152.09	1,087.2	-118.1	50.3	128.0	0.00	0.00	0.00
1,200.0	13.76	152.09	1,184.3	-139.1	61.4	151.8	0.00	0.00	0.00
1,300.0	13.76	152.09	1,281.5	-160.1	72.6	175.6	0.00	0.00	0.00
1,400.0	13.76	152.09	1,378.6	-181.1	83.7	199.3	0.00	0.00	0.00
<b>8 5/8"</b>									
1,500.0	13.76	152.09	1,475.7	-202.2	94.8	223.1	0.00	0.00	0.00
1,600.0	13.76	152.09	1,572.9	-223.2	106.0	246.9	0.00	0.00	0.00
1,700.0	13.76	152.09	1,670.0	-244.2	117.1	270.7	0.00	0.00	0.00
1,800.0	13.76	152.09	1,767.1	-265.2	128.3	294.5	0.00	0.00	0.00
1,900.0	13.76	152.09	1,864.3	-286.2	139.4	318.3	0.00	0.00	0.00
2,000.0	13.76	152.09	1,961.4	-307.3	150.5	342.1	0.00	0.00	0.00
2,100.0	13.76	152.09	2,058.5	-328.3	161.7	365.8	0.00	0.00	0.00
2,200.0	13.76	152.09	2,155.6	-349.3	172.8	389.6	0.00	0.00	0.00
2,300.0	13.76	152.09	2,252.8	-370.3	183.9	413.4	0.00	0.00	0.00
2,400.0	13.76	152.09	2,349.9	-391.3	195.1	437.2	0.00	0.00	0.00
2,500.0	13.76	152.09	2,447.0	-412.4	206.2	461.0	0.00	0.00	0.00
2,600.0	13.76	152.09	2,544.2	-433.4	217.3	484.8	0.00	0.00	0.00
<b>Wasatch 'G' Sand</b>									
2,679.1	13.76	152.09	2,621.0	-450.0	226.1	503.6	0.00	0.00	0.00
2,700.0	13.76	152.09	2,641.3	-454.4	228.5	508.6	0.00	0.00	0.00
2,800.0	13.76	152.09	2,738.4	-475.4	239.6	532.3	0.00	0.00	0.00
2,900.0	13.76	152.09	2,835.6	-496.4	250.7	556.1	0.00	0.00	0.00
3,000.0	13.76	152.09	2,932.7	-517.5	261.9	579.9	0.00	0.00	0.00
3,100.0	13.76	152.09	3,029.8	-538.5	273.0	603.7	0.00	0.00	0.00
3,200.0	13.76	152.09	3,126.9	-559.5	284.1	627.5	0.00	0.00	0.00
<b>Fort Union</b>									
3,284.5	13.76	152.09	3,209.0	-577.3	293.6	647.6	0.00	0.00	0.00
3,300.0	13.76	152.09	3,224.1	-580.5	295.3	651.3	0.00	0.00	0.00
3,400.0	13.76	152.09	3,321.2	-601.5	306.4	675.1	0.00	0.00	0.00
3,500.0	13.76	152.09	3,418.3	-622.6	317.6	698.9	0.00	0.00	0.00
3,600.0	13.76	152.09	3,515.5	-643.6	328.7	722.6	0.00	0.00	0.00
3,700.0	13.76	152.09	3,612.6	-664.6	339.8	746.4	0.00	0.00	0.00
3,800.0	13.76	152.09	3,709.7	-685.6	351.0	770.2	0.00	0.00	0.00
<b>Lower Wasatch</b>									
3,834.3	13.76	152.09	3,743.0	-692.8	354.8	778.4	0.00	0.00	0.00
3,900.0	13.76	152.09	3,806.8	-706.6	362.1	794.0	0.00	0.00	0.00



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<b>Well:</b>	Laramie BCU 0993-14-16W	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<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)
4,000.0	13.76	152.09	3,904.0	-727.7	373.2	817.8	0.00	0.00	0.00
4,100.0	13.76	152.09	4,001.1	-748.7	384.4	841.6	0.00	0.00	0.00
4,200.0	13.76	152.09	4,098.2	-769.7	395.5	865.4	0.00	0.00	0.00
4,300.0	13.76	152.09	4,195.4	-790.7	406.6	889.1	0.00	0.00	0.00
4,400.0	13.76	152.09	4,292.5	-811.7	417.8	912.9	0.00	0.00	0.00
4,500.0	13.76	152.09	4,389.6	-832.8	428.9	936.7	0.00	0.00	0.00
4,600.0	13.76	152.09	4,486.8	-853.8	440.0	960.5	0.00	0.00	0.00
4,700.0	13.76	152.09	4,583.9	-874.8	451.2	984.3	0.00	0.00	0.00
<b>Ohio Creek</b>									
4,750.6	13.76	152.09	4,633.0	-885.4	456.8	996.3	0.00	0.00	0.00
4,800.0	13.76	152.09	4,681.0	-895.8	462.3	1,008.1	0.00	0.00	0.00
4,900.0	13.76	152.09	4,778.1	-916.8	473.4	1,031.9	0.00	0.00	0.00
5,000.0	13.76	152.09	4,875.3	-937.9	484.6	1,055.7	0.00	0.00	0.00
5,100.0	13.76	152.09	4,972.4	-958.9	495.7	1,079.4	0.00	0.00	0.00
5,200.0	13.76	152.09	5,069.5	-979.9	506.9	1,103.2	0.00	0.00	0.00
<b>Williams Fork</b>									
5,254.0	13.76	152.09	5,122.0	-991.3	512.9	1,116.1	0.00	0.00	0.00
5,300.0	13.76	152.09	5,166.7	-1,000.9	518.0	1,127.0	0.00	0.00	0.00
5,400.0	13.76	152.09	5,263.8	-1,021.9	529.1	1,150.8	0.00	0.00	0.00
5,500.0	13.76	152.09	5,360.9	-1,043.0	540.3	1,174.6	0.00	0.00	0.00
5,600.0	13.76	152.09	5,458.1	-1,064.0	551.4	1,198.4	0.00	0.00	0.00
<b>Drop 2.5° /100'</b>									
5,700.7	13.76	152.09	5,555.8	-1,085.1	562.6	1,222.3	0.00	0.00	0.00
5,800.0	11.28	152.09	5,652.8	-1,104.2	572.7	1,243.8	2.50	-2.50	0.00
5,900.0	8.78	152.09	5,751.3	-1,119.6	580.8	1,261.3	2.50	-2.50	0.00
6,000.0	6.28	152.09	5,850.4	-1,131.1	587.0	1,274.4	2.50	-2.50	0.00
6,100.0	3.78	152.09	5,950.0	-1,138.9	591.1	1,283.1	2.50	-2.50	0.00
6,200.0	1.28	152.09	6,049.9	-1,142.8	593.1	1,287.5	2.50	-2.50	0.00
<b>EOD @ Vertical - TOG</b>									
6,251.1	0.00	0.00	6,101.0	-1,143.3	593.4	1,288.1	2.50	-2.50	-297.54
6,300.0	0.00	0.00	6,149.9	-1,143.3	593.4	1,288.1	0.00	0.00	0.00
6,400.0	0.00	0.00	6,249.9	-1,143.3	593.4	1,288.1	0.00	0.00	0.00
6,500.0	0.00	0.00	6,349.9	-1,143.3	593.4	1,288.1	0.00	0.00	0.00
6,600.0	0.00	0.00	6,449.9	-1,143.3	593.4	1,288.1	0.00	0.00	0.00
6,700.0	0.00	0.00	6,549.9	-1,143.3	593.4	1,288.1	0.00	0.00	0.00
6,800.0	0.00	0.00	6,649.9	-1,143.3	593.4	1,288.1	0.00	0.00	0.00
6,900.0	0.00	0.00	6,749.9	-1,143.3	593.4	1,288.1	0.00	0.00	0.00
7,000.0	0.00	0.00	6,849.9	-1,143.3	593.4	1,288.1	0.00	0.00	0.00
<b>Cameo</b>									
7,054.1	0.00	0.00	6,904.0	-1,143.3	593.4	1,288.1	0.00	0.00	0.00
7,100.0	0.00	0.00	6,949.9	-1,143.3	593.4	1,288.1	0.00	0.00	0.00
7,200.0	0.00	0.00	7,049.9	-1,143.3	593.4	1,288.1	0.00	0.00	0.00
7,300.0	0.00	0.00	7,149.9	-1,143.3	593.4	1,288.1	0.00	0.00	0.00
7,400.0	0.00	0.00	7,249.9	-1,143.3	593.4	1,288.1	0.00	0.00	0.00
7,500.0	0.00	0.00	7,349.9	-1,143.3	593.4	1,288.1	0.00	0.00	0.00
7,600.0	0.00	0.00	7,449.9	-1,143.3	593.4	1,288.1	0.00	0.00	0.00
7,700.0	0.00	0.00	7,549.9	-1,143.3	593.4	1,288.1	0.00	0.00	0.00
<b>Base Cameo Coal</b>									
7,782.1	0.00	0.00	7,632.0	-1,143.3	593.4	1,288.1	0.00	0.00	0.00
7,800.0	0.00	0.00	7,649.9	-1,143.3	593.4	1,288.1	0.00	0.00	0.00
<b>Rollins</b>									
7,801.1	0.00	0.00	7,651.0	-1,143.3	593.4	1,288.1	0.00	0.00	0.00
7,900.0	0.00	0.00	7,749.9	-1,143.3	593.4	1,288.1	0.00	0.00	0.00



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<b>Well:</b>	Laramie BCU 0993-14-16W	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<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)
TD @ 8001.1' MD / 7851.0' TVD - 4 1/2"									
8,001.1	0.00	0.00	7,851.0	-1,143.3	593.4	1,288.1	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 - 14-16W	0.00	0.00	7,851.0	-1,143.3	593.4	1,530,900.23	2,365,099.30	39.269537	-107.742834
- plan hits target center									
- Circle (radius 50.0)									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,500.0	1,475.7	8 5/8"	8-5/8	11	
8,001.1	7,851.0	4 1/2"	4-1/2	7-7/8	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,679.1	2,621.0	Wasatch 'G' Sand				
3,284.5	3,209.0	Fort Union				
3,834.3	3,743.0	Lower Wasatch				
4,750.6	4,633.0	Ohio Creek				
5,254.0	5,122.0	Williams Fork				
6,251.1	6,101.0	TOG				
7,054.1	6,904.0	Cameo				
7,782.1	7,632.0	Base Cameo Coal				
7,801.1	7,651.0	Rollins				

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
275.0	275.0	0.0	0.0	Build 2.5° / 100'
555.0	554.3	-16.8	3.0	EOB @ 7.00° Inc. / 170.00° Azm / Build 2.5° / 100'
851.5	845.9	-65.9	22.6	EOB @ 13.76° Inc. / 152.09° Azm
5,700.7	5,555.8	-1,085.1	562.6	Drop 2.5° / 100'
6,251.1	6,101.0	-1,143.3	593.4	EOD @ Vertical
8,001.1	7,851.0	-1,143.3	593.4	TD @ 8001.1' MD / 7851.0' TVD