



Ursa Operating Company, LLC

Rockies Region

BMC L Pad

BMC L 23B-08-07-95

Wellbore #1

Plan: Design #1

Standard Planning Report

15 May, 2017



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well BMC L 23B-08-07-95
Company:	Ursa Operating Company, LLC	TVD Reference:	BMC L 23B-08-07-95 @ 5447.0usft (Est KB)
Project:	Rockies Region	MD Reference:	BMC L 23B-08-07-95 @ 5447.0usft (Est KB)
Site:	BMC L Pad	North Reference:	True
Well:	BMC L 23B-08-07-95	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project	Rockies Region		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		Using geodetic scale factor

Site	BMC L Pad					
Site Position:		Northing:	1,600,015.26 usft	Latitude:	39.453634901	
From:	Lat/Long	Easting:	2,287,409.35 usft	Longitude:	-108.023927826	
Position Uncertainty:		0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.59 °

Well	BMC L 23B-08-07-95, SHL: Lat 39.453232361 Long -108.024038763					
Well Position	+N/-S	-146.6 usft	Northing:	1,599,869.57 usft	Latitude:	39.453232361
	+E/-W	-31.3 usft	Easting:	2,287,373.96 usft	Longitude:	-108.024038763
Position Uncertainty		0.0 usft	Wellhead Elevation:	5,447.0 usft	Ground Level:	5,430.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/11/2017	9.72	65.55	51,518

Design	Design #1			
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	171.29

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	
300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.00	0.00	
703.1	14.11	171.29	699.0	-48.8	7.5	3.50	3.50	0.00	171.29	
3,939.7	14.11	171.29	3,838.0	-828.7	126.9	0.00	0.00	0.00	0.00	
4,342.7	0.00	0.00	4,237.0	-877.5	134.4	3.50	-3.50	0.00	180.00	BMC L 23B-08-07-95
6,892.7	0.00	0.00	6,787.0	-877.5	134.4	0.00	0.00	0.00	0.00	

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Project:	Rockies Region	MD Reference:	BMC L 23B-08-07-95 @ 5447.0usft (Est KB)
Site:	BMC L Pad	North Reference:	True
Well:	BMC L 23B-08-07-95	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

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
0.1	0.00	0.00	0.1	0.0	0.0	0.0	0.00	0.00	0.00
SHL 39.453232361, -108.024038763									
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
Start Build 3.50									
400.0	3.50	171.29	399.9	-3.0	0.5	3.1	3.50	3.50	0.00
500.0	7.00	171.29	499.5	-12.1	1.8	12.2	3.50	3.50	0.00
600.0	10.50	171.29	598.3	-27.1	4.1	27.4	3.50	3.50	0.00
703.1	14.11	171.29	699.0	-48.8	7.5	49.4	3.50	3.50	0.00
Start 3236.6 hold at 703.1 MD									
800.0	14.11	171.29	793.0	-72.2	11.0	73.0	0.00	0.00	0.00
900.0	14.11	171.29	890.0	-96.3	14.7	97.4	0.00	0.00	0.00
1,000.0	14.11	171.29	987.0	-120.3	18.4	121.8	0.00	0.00	0.00
1,100.0	14.11	171.29	1,084.0	-144.4	22.1	146.1	0.00	0.00	0.00
1,200.0	14.11	171.29	1,181.0	-168.5	25.8	170.5	0.00	0.00	0.00
1,300.0	14.11	171.29	1,277.9	-192.6	29.5	194.9	0.00	0.00	0.00
1,400.0	14.11	171.29	1,374.9	-216.7	33.2	219.3	0.00	0.00	0.00
1,500.0	14.11	171.29	1,471.9	-240.8	36.9	243.6	0.00	0.00	0.00
1,600.0	14.11	171.29	1,568.9	-264.9	40.6	268.0	0.00	0.00	0.00
1,700.0	14.11	171.29	1,665.9	-289.0	44.3	292.4	0.00	0.00	0.00
1,735.2	14.11	171.29	1,700.0	-297.5	45.6	301.0	0.00	0.00	0.00
Surface Casing									
1,800.0	14.11	171.29	1,762.9	-313.1	47.9	316.8	0.00	0.00	0.00
1,900.0	14.11	171.29	1,859.8	-337.2	51.6	341.1	0.00	0.00	0.00
2,000.0	14.11	171.29	1,956.8	-361.3	55.3	365.5	0.00	0.00	0.00
2,100.0	14.11	171.29	2,053.8	-385.4	59.0	389.9	0.00	0.00	0.00
2,200.0	14.11	171.29	2,150.8	-409.5	62.7	414.3	0.00	0.00	0.00
2,300.0	14.11	171.29	2,247.8	-433.6	66.4	438.6	0.00	0.00	0.00
2,400.0	14.11	171.29	2,344.8	-457.7	70.1	463.0	0.00	0.00	0.00
2,500.0	14.11	171.29	2,441.7	-481.8	73.8	487.4	0.00	0.00	0.00
2,600.0	14.11	171.29	2,538.7	-505.9	77.5	511.8	0.00	0.00	0.00
2,700.0	14.11	171.29	2,635.7	-530.0	81.1	536.1	0.00	0.00	0.00
2,800.0	14.11	171.29	2,732.7	-554.1	84.8	560.5	0.00	0.00	0.00
2,900.0	14.11	171.29	2,829.7	-578.2	88.5	584.9	0.00	0.00	0.00
3,000.0	14.11	171.29	2,926.7	-602.2	92.2	609.3	0.00	0.00	0.00
3,100.0	14.11	171.29	3,023.6	-626.3	95.9	633.6	0.00	0.00	0.00
3,200.0	14.11	171.29	3,120.6	-650.4	99.6	658.0	0.00	0.00	0.00
3,300.0	14.11	171.29	3,217.6	-674.5	103.3	682.4	0.00	0.00	0.00
3,400.0	14.11	171.29	3,314.6	-698.6	107.0	706.8	0.00	0.00	0.00
3,500.0	14.11	171.29	3,411.6	-722.7	110.7	731.1	0.00	0.00	0.00
3,524.2	14.11	171.29	3,435.0	-728.5	111.6	737.0	0.00	0.00	0.00
Williams Fork									
3,600.0	14.11	171.29	3,508.6	-746.8	114.3	755.5	0.00	0.00	0.00
3,700.0	14.11	171.29	3,605.5	-770.9	118.0	779.9	0.00	0.00	0.00
3,800.0	14.11	171.29	3,702.5	-795.0	121.7	804.3	0.00	0.00	0.00
3,900.0	14.11	171.29	3,799.5	-819.1	125.4	828.6	0.00	0.00	0.00
3,939.7	14.11	171.29	3,838.0	-828.7	126.9	838.3	0.00	0.00	0.00
Start Drop -3.50									
4,000.0	12.00	171.29	3,896.7	-842.1	128.9	851.9	3.50	-3.50	0.00
4,100.0	8.50	171.29	3,995.1	-859.7	131.6	869.7	3.50	-3.50	0.00
4,200.0	5.00	171.29	4,094.4	-871.3	133.4	881.5	3.50	-3.50	0.00

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Site:	BMC L Pad	North Reference:	True
Well:	BMC L 23B-08-07-95	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

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)
4,300.0	1.50	171.29	4,194.3	-876.9	134.3	887.1	3.50	-3.50	0.00
4,342.7	0.00	0.00	4,237.0	-877.5	134.4	887.7	3.50	-3.50	0.00
Back to Vertical - Start 2550.0 hold at 4342.7 MD - Top of Gas - BMC L 23B-08-07-95 TGT									
4,400.0	0.00	0.00	4,294.3	-877.5	134.4	887.7	0.00	0.00	0.00
4,500.0	0.00	0.00	4,394.3	-877.5	134.4	887.7	0.00	0.00	0.00
4,600.0	0.00	0.00	4,494.3	-877.5	134.4	887.7	0.00	0.00	0.00
4,700.0	0.00	0.00	4,594.3	-877.5	134.4	887.7	0.00	0.00	0.00
4,800.0	0.00	0.00	4,694.3	-877.5	134.4	887.7	0.00	0.00	0.00
4,900.0	0.00	0.00	4,794.3	-877.5	134.4	887.7	0.00	0.00	0.00
5,000.0	0.00	0.00	4,894.3	-877.5	134.4	887.7	0.00	0.00	0.00
5,100.0	0.00	0.00	4,994.3	-877.5	134.4	887.7	0.00	0.00	0.00
5,200.0	0.00	0.00	5,094.3	-877.5	134.4	887.7	0.00	0.00	0.00
5,300.0	0.00	0.00	5,194.3	-877.5	134.4	887.7	0.00	0.00	0.00
5,400.0	0.00	0.00	5,294.3	-877.5	134.4	887.7	0.00	0.00	0.00
5,500.0	0.00	0.00	5,394.3	-877.5	134.4	887.7	0.00	0.00	0.00
5,600.0	0.00	0.00	5,494.3	-877.5	134.4	887.7	0.00	0.00	0.00
5,700.0	0.00	0.00	5,594.3	-877.5	134.4	887.7	0.00	0.00	0.00
5,800.0	0.00	0.00	5,694.3	-877.5	134.4	887.7	0.00	0.00	0.00
5,900.0	0.00	0.00	5,794.3	-877.5	134.4	887.7	0.00	0.00	0.00
6,000.0	0.00	0.00	5,894.3	-877.5	134.4	887.7	0.00	0.00	0.00
6,084.7	0.00	0.00	5,979.0	-877.5	134.4	887.7	0.00	0.00	0.00
Cameo									
6,100.0	0.00	0.00	5,994.3	-877.5	134.4	887.7	0.00	0.00	0.00
6,200.0	0.00	0.00	6,094.3	-877.5	134.4	887.7	0.00	0.00	0.00
6,300.0	0.00	0.00	6,194.3	-877.5	134.4	887.7	0.00	0.00	0.00
6,400.0	0.00	0.00	6,294.3	-877.5	134.4	887.7	0.00	0.00	0.00
6,500.0	0.00	0.00	6,394.3	-877.5	134.4	887.7	0.00	0.00	0.00
6,592.7	0.00	0.00	6,487.0	-877.5	134.4	887.7	0.00	0.00	0.00
Rollins									
6,600.0	0.00	0.00	6,494.3	-877.5	134.4	887.7	0.00	0.00	0.00
6,700.0	0.00	0.00	6,594.3	-877.5	134.4	887.7	0.00	0.00	0.00
6,800.0	0.00	0.00	6,694.3	-877.5	134.4	887.7	0.00	0.00	0.00
6,892.7	0.00	0.00	6,787.0	-877.5	134.4	887.7	0.00	0.00	0.00
TD at 6892.7 - BHL 39.4508234, -108.0235630									

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									
BMC L 23B-08-07-95 TC	0.00	0.00	4,237.0	-877.5	134.4	1,598,988.75	2,287,483.88	39.450823400	-108.023563000
- plan hits target center									
- Rectangle (sides W100.0 H40.0 D2,550.0)									

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Project:	Rockies Region	MD Reference:	BMC L 23B-08-07-95 @ 5447.0usft (Est KB)
Site:	BMC L Pad	North Reference:	True
Well:	BMC L 23B-08-07-95	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

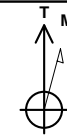
Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,524.2	3,435.0	Williams Fork		0.00	
4,342.7	4,237.0	Top of Gas		0.00	
6,084.7	5,979.0	Cameo		0.00	
6,592.7	6,487.0	Rollins		0.00	

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
0.1	0.1	0.0	0.0	SHL 39.453232361, -108.024038763
300.0	300.0	0.0	0.0	Start Build 3.50
703.1	699.0	-48.8	7.5	Start 3236.6 hold at 703.1 MD
1,735.2	1,700.0	-297.5	45.6	Surface Casing
3,939.7	3,838.0	-828.7	126.9	Start Drop -3.50
4,342.7	4,237.0	-877.5	134.4	Back to Vertical
4,342.7	4,237.0	-877.5	134.4	Start 2550.0 hold at 4342.7 MD
6,892.7	6,787.0	-877.5	134.4	TD at 6892.7
6,892.7	6,787.0	-877.5	134.4	BHL 39.4508234, -108.0235630



Well Name: BMC L 23B-08-07-95
Surface Location: BMC L Pad
North American Datum 1983, US State Plane 1983, Colorado Central Zone
Ground Elevation: 5430.0
+N/-S +E/-W Northing Easting Latitude Longitude
0.0 0.0 1599869.57 2287373.96 39.453232361 -108.024038763
Est KB BMC L 23B-08-07-95 @ 5447.0usft (Est KB)

Slot



Azimuths to True North
Magnetic North: 9.72°
Magnetic Field
Strength: 51517.9nT
Dip Angle: 65.55°
Date: 5/11/2017
Model: IGRF2015

BMC L Pad
BMC L 23B-08-07-95
Design #1
20:20, May 15 2017

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
BMC L 23B-08-07-95 TGT	4237.0	-877.5	134.4	1599898.75	2287483.88	39.450823400	-108.023563000	Rectangle (Sides: L40.0 W100.0)

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.0	
3	703.1	14.11	171.29	699.0	-48.8	7.5	3.50	171.29	49.4	
4	3939.7	14.11	171.29	3838.0	-828.7	126.9	0.00	0.00	838.3	
5	4342.7	0.00	0.00	4237.0	-877.5	134.4	3.50	180.00	887.7	BMC L 23B-08-07-95 TGT
6	6892.7	0.00	0.00	6787.0	-877.5	134.4	0.00	0.00	887.7	

ANNOTATIONS

TVD	MD	Annotation
0.1	0.1	SHL 39.453232361, -108.024038763
300.0	300.0	Start Build 3.50
699.0	703.1	Start 3236.6 hold at 703.1 MD
1700.0	1735.2	Surface Casing
3838.0	3939.7	Start Drop -3.50
4237.0	4342.7	Back to Vertical
4237.0	4342.7	Start 2550.0 hold at 4342.7 MD
6787.0	6892.7	TD at 6892.7
6787.0	6892.7	BHL 39.4508234, -108.0235630

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
3435.0	3524.2	Williams Fork	0.00	
4237.0	4342.7	Top of Gas	0.00	
5979.0	6084.7	Cameo	0.00	
6487.0	6592.7	Rollins	0.00	

