



Ursa Operating Company, LLC

Rockies Region

BMC B

BMC B 23A-18-07-95 (New SHL)

Wellbore #1

Plan: Design #1

Standard Planning Report

28 June, 2017



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well BMC B 23A-18-07-95 (New SHL)
Company:	Ursa Operating Company, LLC	TVD Reference:	BMC B 23A-18-07-95 (New SHL) @ 5117.0usft (Plan KB)
Project:	Rockies Region	MD Reference:	BMC B 23A-18-07-95 (New SHL) @ 5117.0usft (Plan KB)
Site:	BMC B	North Reference:	True
Well:	BMC B 23A-18-07-95 (New SHL)	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 B		
Site Position:		Northing:	1,594,816.33 usft
From:	Lat/Long	Easting:	2,280,886.96 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	39.438867241
		Longitude:	-108.046501442
		Grid Convergence:	-1.61 °

Well	BMC B 23A-18-07-95 (New SHL), SHL: Lat 39.438810520 Long -108.046269300		
Well Position	+N/-S	-20.7 usft	Latitude: 39.438810520
	+E/-W	65.6 usft	Longitude: -108.046269300
Position Uncertainty	0.0 usft	Wellhead Elevation:	5,117.0 usft
		Ground Level:	5,100.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	6/28/2017	9.71	65.53	51,495

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	119.93	

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	
1,044.9	26.07	119.93	1,019.4	-83.1	144.3	3.50	3.50	0.00	119.93	
3,341.7	26.07	119.93	3,082.6	-586.7	1,019.1	0.00	0.00	0.00	0.00	
4,086.6	0.00	0.00	3,802.0	-669.8	1,163.5	3.50	-3.50	0.00	180.00	23A-18-07-95 TGT
6,622.6	0.00	0.00	6,338.0	-669.8	1,163.5	0.00	0.00	0.00	0.00	

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well BMC B 23A-18-07-95 (New SHL)
Company:	Ursa Operating Company, LLC	TVD Reference:	BMC B 23A-18-07-95 (New SHL) @ 5117.0usft (Plan KB)
Project:	Rockies Region	MD Reference:	BMC B 23A-18-07-95 (New SHL) @ 5117.0usft (Plan KB)
Site:	BMC B	North Reference:	True
Well:	BMC B 23A-18-07-95 (New SHL)	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: 39.438810520 -108.046269300									
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	119.93	399.9	-1.5	2.6	3.1	3.50	3.50	0.00
500.0	7.00	119.93	499.5	-6.1	10.6	12.2	3.50	3.50	0.00
600.0	10.50	119.93	598.3	-13.7	23.8	27.4	3.50	3.50	0.00
700.0	14.00	119.93	696.0	-24.3	42.1	48.6	3.50	3.50	0.00
800.0	17.50	119.93	792.3	-37.8	65.7	75.8	3.50	3.50	0.00
900.0	21.00	119.93	886.7	-54.3	94.2	108.7	3.50	3.50	0.00
1,000.0	24.50	119.93	978.9	-73.5	127.7	147.4	3.50	3.50	0.00
1,044.9	26.07	119.93	1,019.4	-83.1	144.3	166.6	3.50	3.50	0.00
Start 2296.8 hold at 1044.9 MD									
1,100.0	26.07	119.93	1,069.0	-95.2	165.3	190.8	0.00	0.00	0.00
1,200.0	26.07	119.93	1,158.8	-117.1	203.4	234.7	0.00	0.00	0.00
1,300.0	26.07	119.93	1,248.6	-139.0	241.5	278.7	0.00	0.00	0.00
1,400.0	26.07	119.93	1,338.4	-161.0	279.6	322.6	0.00	0.00	0.00
1,500.0	26.07	119.93	1,428.3	-182.9	317.7	366.6	0.00	0.00	0.00
1,600.0	26.07	119.93	1,518.1	-204.8	355.8	410.5	0.00	0.00	0.00
1,700.0	26.07	119.93	1,607.9	-226.8	393.9	454.5	0.00	0.00	0.00
1,800.0	26.07	119.93	1,697.7	-248.7	431.9	498.4	0.00	0.00	0.00
1,802.5	26.07	119.93	1,700.0	-249.2	432.9	499.5	0.00	0.00	0.00
Surface Casing									
1,900.0	26.07	119.93	1,787.6	-270.6	470.0	542.4	0.00	0.00	0.00
2,000.0	26.07	119.93	1,877.4	-292.5	508.1	586.3	0.00	0.00	0.00
2,100.0	26.07	119.93	1,967.2	-314.5	546.2	630.3	0.00	0.00	0.00
2,200.0	26.07	119.93	2,057.0	-336.4	584.3	674.2	0.00	0.00	0.00
2,300.0	26.07	119.93	2,146.9	-358.3	622.4	718.2	0.00	0.00	0.00
2,400.0	26.07	119.93	2,236.7	-380.2	660.5	762.1	0.00	0.00	0.00
2,500.0	26.07	119.93	2,326.5	-402.2	698.6	806.1	0.00	0.00	0.00
2,600.0	26.07	119.93	2,416.3	-424.1	736.6	850.0	0.00	0.00	0.00
2,700.0	26.07	119.93	2,506.2	-446.0	774.7	893.9	0.00	0.00	0.00
2,800.0	26.07	119.93	2,596.0	-468.0	812.8	937.9	0.00	0.00	0.00
2,900.0	26.07	119.93	2,685.8	-489.9	850.9	981.8	0.00	0.00	0.00
3,000.0	26.07	119.93	2,775.6	-511.8	889.0	1,025.8	0.00	0.00	0.00
3,100.0	26.07	119.93	2,865.5	-533.7	927.1	1,069.7	0.00	0.00	0.00
3,200.0	26.07	119.93	2,955.3	-555.7	965.2	1,113.7	0.00	0.00	0.00
3,284.3	26.07	119.93	3,031.0	-574.1	997.3	1,150.7	0.00	0.00	0.00
Williams Fork									
3,300.0	26.07	119.93	3,045.1	-577.6	1,003.2	1,157.6	0.00	0.00	0.00
3,341.7	26.07	119.93	3,082.6	-586.7	1,019.1	1,176.0	0.00	0.00	0.00
Start Drop -3.50									
3,400.0	24.03	119.93	3,135.4	-599.1	1,040.5	1,200.6	3.50	-3.50	0.00
3,500.0	20.53	119.93	3,227.9	-618.0	1,073.4	1,238.5	3.50	-3.50	0.00
3,600.0	17.03	119.93	3,322.6	-634.0	1,101.3	1,270.7	3.50	-3.50	0.00
3,700.0	13.53	119.93	3,419.0	-647.2	1,124.1	1,297.1	3.50	-3.50	0.00
3,800.0	10.03	119.93	3,516.9	-657.4	1,141.8	1,317.5	3.50	-3.50	0.00
3,900.0	6.53	119.93	3,615.8	-664.5	1,154.3	1,331.9	3.50	-3.50	0.00

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Site:	BMC B	North Reference:	True
Well:	BMC B 23A-18-07-95 (New SHL)	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)
4,000.0	3.03	119.93	3,715.5	-668.7	1,161.5	1,340.2	3.50	-3.50	0.00
4,086.6	0.00	0.00	3,802.0	-669.8	1,163.5	1,342.5	3.50	-3.50	-138.54
Back to Vertical - Start 2536.0 hold at 4086.6 MD - Top of Gas - 23A-18-07-95 TGT									
4,100.0	0.00	0.00	3,815.4	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
4,200.0	0.00	0.00	3,915.4	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
4,300.0	0.00	0.00	4,015.4	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
4,400.0	0.00	0.00	4,115.4	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
4,500.0	0.00	0.00	4,215.4	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
4,600.0	0.00	0.00	4,315.4	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
4,700.0	0.00	0.00	4,415.4	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
4,800.0	0.00	0.00	4,515.4	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
4,900.0	0.00	0.00	4,615.4	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
5,000.0	0.00	0.00	4,715.4	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
5,100.0	0.00	0.00	4,815.4	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
5,200.0	0.00	0.00	4,915.4	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
5,300.0	0.00	0.00	5,015.4	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
5,400.0	0.00	0.00	5,115.4	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
5,500.0	0.00	0.00	5,215.4	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
5,600.0	0.00	0.00	5,315.4	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
5,700.0	0.00	0.00	5,415.4	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
5,704.6	0.00	0.00	5,420.0	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
Cameo									
5,800.0	0.00	0.00	5,515.4	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
5,900.0	0.00	0.00	5,615.4	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
6,000.0	0.00	0.00	5,715.4	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
6,100.0	0.00	0.00	5,815.4	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
6,122.6	0.00	0.00	5,838.0	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
Rollins									
6,200.0	0.00	0.00	5,915.4	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
6,300.0	0.00	0.00	6,015.4	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
6,400.0	0.00	0.00	6,115.4	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
6,500.0	0.00	0.00	6,215.4	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
6,600.0	0.00	0.00	6,315.4	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
6,622.6	0.00	0.00	6,338.0	-669.8	1,163.5	1,342.5	0.00	0.00	0.00
TD at 6622.6 - BHL: 39.4369715 -108.0421501									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
23A-18-07-95 TGT - plan hits target center - Rectangle (sides W100.0 H40.0 D2,536.0)	0.00	0.00	3,802.0	-669.8	1,163.5	1,594,091.70	2,282,096.10	39.436971500	-108.042150100

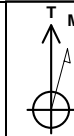
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Company:	Ursa Operating Company, LLC	TVD Reference:	BMC B 23A-18-07-95 (New SHL) @ 5117.0usft (Plan KB)
Project:	Rockies Region	MD Reference:	BMC B 23A-18-07-95 (New SHL) @ 5117.0usft (Plan KB)
Site:	BMC B	North Reference:	True
Well:	BMC B 23A-18-07-95 (New SHL)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,284.3	3,031.0	Williams Fork		0.00	
4,086.6	3,802.0	Top of Gas		0.00	
5,704.6	5,420.0	Cameo		0.00	
6,122.6	5,838.0	Rollins		0.00	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
0.1	0.1	0.0	0.0	SHL: 39.438810520 -108.046269300	
300.0	300.0	0.0	0.0	Start Build 3.50	
1,044.9	1,019.4	-83.1	144.3	Start 2296.8 hold at 1044.9 MD	
1,802.5	1,700.0	-249.2	432.9	Surface Casing	
3,341.7	3,082.6	-586.7	1,019.1	Start Drop -3.50	
4,086.6	3,802.0	-669.8	1,163.5	Back to Vertical	
4,086.6	3,802.0	-669.8	1,163.5	Start 2536.0 hold at 4086.6 MD	
6,622.6	6,338.0	-669.8	1,163.5	TD at 6622.6	
6,622.6	6,338.0	-669.8	1,163.5	BHL: 39.4369715 -108.0421501	



Well Name: BMC B 23A-18-07-95 (New SHL)
Surface Location: BMC B
North American Datum 1983, US State Plane 1983, Colorado Central Zone
Ground Elevation: 5100.0
+N/-S +E/-W Northing Easting Latitude Longitude
0.0 0.0 1594793.85 2280951.91 39.438810520 -108.046269300
Plan KB BMC B 23A-18-07-95 (New SHL) @ 5117.0usft (Plan KB)



Azimuths to True North
Magnetic North: 9.71°
Magnetic Field
Strength: 51495.2snT
Dip Angle: 65.53°
Date: 6/28/2017
Model: IGRF2015

BMC B
BMC B 23A-18-07-95 (New SHL)
Design #1
6:13, June 28 2017

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

Name	TVD	+N/-S	+E/-W	Northing	Eastings	Latitude	Longitude	Shape
23A-18-07-95 TGT	3802.0	-669.8	1163.5	1594091.71	2282096.10	39.436971500	-108.042150100	Rectangle (Sides: L40.0 W100.0)

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	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	1044.9	26.07	119.93	1019.4	-83.1	144.3	3.50	119.93	166.6	
4	3341.7	26.07	119.93	3082.6	-586.7	1019.1	0.00	0.00	1176.0	
5	4086.6	0.00	0.00	3802.0	-669.8	1163.5	3.50	180.00	1342.5	23A-18-07-95 TGT
6	6622.6	0.00	0.00	6338.0	-669.8	1163.5	0.00	0.00	1342.5	

ANNOTATIONS

TVD	MD	Annotation
0.1	0.1	SHL: 39.438810520 -108.046269300
300.0	300.0	Start Build 3.50
1019.4	1044.9	Start 2296.8 hold at 1044.9 MD
1700.0	1802.5	Surface Casing
3082.6	3341.7	Start Drop -3.50
3802.0	4086.6	Back to Vertical
3802.0	4086.6	Start 2536.0 hold at 4086.6 MD
6338.0	6622.6	TD at 6622.6
6338.0	6622.6	BHL: 39.4369715 -108.0421501

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
3031.0	3284.3	Williams Fork	0.00	
3802.0	4086.6	Top of Gas	0.00	
5420.0	5704.6	Cameo	0.00	
5838.0	6122.6	Rollins	0.00	

