



# **Ursa Operating Company, LLC**

**Rockies Region**

**BMC B**

**BMC B 13C-18-07-95**

**Wellbore #1**

**Plan: Design #1**

## **Standard Planning Report**

**28 October, 2015**



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well BMC B 13C-18-07-95
<b>Company:</b>	Ursa Operating Company, LLC	<b>TVD Reference:</b>	BMC B 13C-18-07-95 @ 5117.0usft (PLAN KB)
<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	BMC B 13C-18-07-95 @ 5117.0usft (PLAN KB)
<b>Site:</b>	BMC B	<b>North Reference:</b>	True
<b>Well:</b>	BMC B 13C-18-07-95	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

<b>Project</b>	Rockies Region		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Central Zone		

Site		BMC B				
Site Position:		Northing:	1,594,816.33 usft	Latitude:	39° 26' 19.922 N	
From:	Lat/Long	Easting:	2,280,886.96 usft	Longitude:	108° 2' 47.405 W	
Position Uncertainty:		0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.61 °

Well	BMC B 13C-18-07-95, SHL LAT: 39.4388036 LONG: -108.04658765					
Well Position	+N/-S	-23.2 usft	Northing:	1,594,793.84 usft	Latitude:	39° 26' 19.693 N
	+E/-W	-24.3 usft	Easting:	2,280,861.97 usft	Longitude:	108° 2' 47.716 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	5,117.0 usft	Ground Level:	5,100.0 usft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	10/23/2015	9.81	65.56	51,780

<b>Design</b>	Design #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	182.95

<b>Plan Sections</b>										
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	
500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,204.2	24.65	182.95	1,182.7	-148.9	-7.7	3.50	3.50	0.00	182.95	
3,308.6	24.65	182.95	3,095.3	-1,025.4	-52.8	0.00	0.00	0.00	0.00	
4,012.8	0.00	0.00	3,778.0	-1,174.3	-60.4	3.50	-3.50	0.00	180.00	13C-18-07-95 TGT
6,548.8	0.00	0.00	6,314.0	-1,174.3	-60.4	0.00	0.00	0.00	0.00	

<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well BMC B 13C-18-07-95
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<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	BMC B 13C-18-07-95 @ 5117.0usft (PLAN KB)
<b>Site:</b>	BMC B	<b>North Reference:</b>	True
<b>Well:</b>	BMC B 13C-18-07-95	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	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	
<b>SHL: 39.4388036 -108.04658765</b>										
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	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00	
<b>Start Build 3.50</b>										
600.0	3.50	182.95	599.9	-3.0	-0.2	3.1	3.50	3.50	0.00	
700.0	7.00	182.95	699.5	-12.2	-0.6	12.2	3.50	3.50	0.00	
800.0	10.50	182.95	798.3	-27.4	-1.4	27.4	3.50	3.50	0.00	
900.0	14.00	182.95	896.0	-48.6	-2.5	48.6	3.50	3.50	0.00	
1,000.0	17.50	182.95	992.3	-75.7	-3.9	75.8	3.50	3.50	0.00	
1,100.0	21.00	182.95	1,086.7	-108.6	-5.6	108.7	3.50	3.50	0.00	
1,204.2	24.65	182.95	1,182.7	-148.9	-7.7	149.1	3.50	3.50	0.00	
<b>Start 2104.3 hold at 1204.2 MD</b>										
1,300.0	24.65	182.95	1,269.8	-188.8	-9.7	189.1	0.00	0.00	0.00	
1,400.0	24.65	182.95	1,360.6	-230.5	-11.9	230.8	0.00	0.00	0.00	
1,500.0	24.65	182.95	1,451.5	-272.1	-14.0	272.5	0.00	0.00	0.00	
1,600.0	24.65	182.95	1,542.4	-313.8	-16.1	314.2	0.00	0.00	0.00	
1,700.0	24.65	182.95	1,633.3	-355.4	-18.3	355.9	0.00	0.00	0.00	
1,773.4	24.65	182.95	1,700.0	-386.0	-19.9	386.5	0.00	0.00	0.00	
<b>Surface Casing</b>										
1,800.0	24.65	182.95	1,724.2	-397.1	-20.4	397.6	0.00	0.00	0.00	
1,900.0	24.65	182.95	1,815.1	-438.7	-22.6	439.3	0.00	0.00	0.00	
2,000.0	24.65	182.95	1,906.0	-480.4	-24.7	481.0	0.00	0.00	0.00	
2,100.0	24.65	182.95	1,996.9	-522.0	-26.9	522.7	0.00	0.00	0.00	
2,200.0	24.65	182.95	2,087.8	-563.7	-29.0	564.4	0.00	0.00	0.00	
2,300.0	24.65	182.95	2,178.6	-605.3	-31.1	606.1	0.00	0.00	0.00	
2,400.0	24.65	182.95	2,269.5	-647.0	-33.3	647.8	0.00	0.00	0.00	
2,500.0	24.65	182.95	2,360.4	-688.6	-35.4	689.5	0.00	0.00	0.00	
2,600.0	24.65	182.95	2,451.3	-730.3	-37.6	731.2	0.00	0.00	0.00	
2,700.0	24.65	182.95	2,542.2	-771.9	-39.7	772.9	0.00	0.00	0.00	
2,800.0	24.65	182.95	2,633.1	-813.6	-41.9	814.6	0.00	0.00	0.00	
2,900.0	24.65	182.95	2,724.0	-855.2	-44.0	856.3	0.00	0.00	0.00	
3,000.0	24.65	182.95	2,814.9	-896.9	-46.2	898.0	0.00	0.00	0.00	
3,100.0	24.65	182.95	2,905.8	-938.5	-48.3	939.8	0.00	0.00	0.00	
3,200.0	24.65	182.95	2,996.6	-980.2	-50.4	981.5	0.00	0.00	0.00	
3,211.4	24.65	182.95	3,007.0	-984.9	-50.7	986.2	0.00	0.00	0.00	
<b>Williams Fork</b>										
3,308.6	24.65	182.95	3,095.3	-1,025.4	-52.8	1,026.7	0.00	0.00	0.00	
<b>Start Drop -3.50</b>										
3,400.0	21.45	182.95	3,179.4	-1,061.1	-54.6	1,062.5	3.50	-3.50	0.00	
3,500.0	17.95	182.95	3,273.6	-1,094.8	-56.3	1,096.2	3.50	-3.50	0.00	
3,600.0	14.45	182.95	3,369.6	-1,122.6	-57.8	1,124.1	3.50	-3.50	0.00	
3,700.0	10.95	182.95	3,467.1	-1,144.6	-58.9	1,146.1	3.50	-3.50	0.00	
3,800.0	7.45	182.95	3,565.8	-1,160.5	-59.7	1,162.1	3.50	-3.50	0.00	
3,900.0	3.95	182.95	3,665.3	-1,170.4	-60.2	1,172.0	3.50	-3.50	0.00	
4,000.0	0.45	182.95	3,765.2	-1,174.3	-60.4	1,175.8	3.50	-3.50	0.00	
4,012.8	0.00	0.00	3,778.0	-1,174.3	-60.4	1,175.9	3.50	-3.50	0.00	
<b>Back to Vertical - Start 2536.0 hold at 4012.8 MD - Top Of Gas</b>										

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<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	BMC B 13C-18-07-95 @ 5117.0usft (PLAN KB)
<b>Site:</b>	BMC B	<b>North Reference:</b>	True
<b>Well:</b>	BMC B 13C-18-07-95	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	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)
4,100.0	0.00	0.00	3,865.2	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
4,200.0	0.00	0.00	3,965.2	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
4,300.0	0.00	0.00	4,065.2	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
4,400.0	0.00	0.00	4,165.2	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
4,500.0	0.00	0.00	4,265.2	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
4,600.0	0.00	0.00	4,365.2	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
4,700.0	0.00	0.00	4,465.2	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
4,800.0	0.00	0.00	4,565.2	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
4,900.0	0.00	0.00	4,665.2	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
5,000.0	0.00	0.00	4,765.2	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
5,100.0	0.00	0.00	4,865.2	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
5,200.0	0.00	0.00	4,965.2	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
5,300.0	0.00	0.00	5,065.2	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
5,400.0	0.00	0.00	5,165.2	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
5,500.0	0.00	0.00	5,265.2	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
5,600.0	0.00	0.00	5,365.2	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
5,630.8	0.00	0.00	5,396.0	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
Cameo									
5,700.0	0.00	0.00	5,465.2	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
5,800.0	0.00	0.00	5,565.2	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
5,900.0	0.00	0.00	5,665.2	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
6,000.0	0.00	0.00	5,765.2	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
6,048.8	0.00	0.00	5,814.0	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
Rollins									
6,100.0	0.00	0.00	5,865.2	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
6,200.0	0.00	0.00	5,965.2	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
6,300.0	0.00	0.00	6,065.2	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
6,400.0	0.00	0.00	6,165.2	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
6,500.0	0.00	0.00	6,265.2	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
6,548.7	0.00	0.00	6,313.9	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
BHL: 39.4355795 -108.0468016									
6,548.8	0.00	0.00	6,314.0	-1,174.3	-60.4	1,175.9	0.00	0.00	0.00
TD at 6548.8									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
13C-18-07-95 TGT	0.00	0.00	3,778.0	-1,174.3	-60.4	1,593,621.68	2,280,768.65	39° 26' 8.086 N	108° 2' 48.486 W
- hit/miss target									
- Shape									
- plan hits target center									
- Rectangle (sides W100.0 H40.0 D2,536.0)									

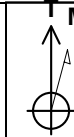
<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well BMC B 13C-18-07-95
<b>Company:</b>	Ursa Operating Company, LLC	<b>TVD Reference:</b>	BMC B 13C-18-07-95 @ 5117.0usft (PLAN KB)
<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	BMC B 13C-18-07-95 @ 5117.0usft (PLAN KB)
<b>Site:</b>	BMC B	<b>North Reference:</b>	True
<b>Well:</b>	BMC B 13C-18-07-95	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,211.4	3,007.0	Williams Fork		0.00	
4,012.8	3,778.0	Top Of Gas		0.00	
5,630.8	5,396.0	Cameo		0.00	
6,048.8	5,814.0	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: 39.4388036 -108.04658765
500.0	500.0	0.0	0.0	Start Build 3.50
1,204.2	1,182.7	-148.9	-7.7	Start 2104.3 hold at 1204.2 MD
1,773.4	1,700.0	-386.0	-19.9	Surface Casing
3,308.6	3,095.3	-1,025.4	-52.8	Start Drop -3.50
4,012.8	3,778.0	-1,174.3	-60.4	Back to Vertical
4,012.8	3,778.0	-1,174.3	-60.4	Start 2536.0 hold at 4012.8 MD
6,548.7	6,313.9	-1,174.3	-60.4	BHL: 39.4355795 -108.0468016
6,548.8	6,314.0	-1,174.3	-60.4	TD at 6548.8



Well Name: BMC B 13C-18-07-95  
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 1594793.84 2280861.97 39° 26' 19.693 N 108° 2' 47.716 W  
PLAN KB BMC B 13C-18-07-95 @ 5117.0usft (PLAN KB)



Azimuths to True North  
Magnetic North: 9.81°  
Magnetic Field  
Strength: 51780.4snT  
Dip Angle: 65.56°  
Date: 10/23/2015  
Model: IGRF2010

BMC B  
BMC B 13C-18-07-95  
Design #1  
12:12, October 28 2015

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
13C-18-07-95 TGT	3778.0	-1174.3	-60.4	1593621.68	2280768.65	39° 26' 8.086 N	108° 2' 48.486 W	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	500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.0	
3	1204.2	24.65	182.95	1182.7	-148.9	-7.7	3.50	182.95	149.1	
4	3308.6	24.65	182.95	3095.3	-1025.4	-52.8	0.00	0.00	1026.7	
5	4012.8	0.00	0.00	3778.0	-1174.3	-60.4	3.50	180.00	1175.9	13C-18-07-95 TGT
6	6548.8	0.00	0.00	6314.0	-1174.3	-60.4	0.00	0.00	1175.9	

#### ANNOTATIONS

TVD	MD	Annotation
0.1	0.1	SHL: 39.4388036 -108.04658765
500.0	500.0	Start Build 3.50
1182.7	1204.2	Start 2104.3 hold at 1204.2 MD
1700.0	1773.4	Surface Casing
3095.3	3308.6	Start Drop -3.50
3778.0	4012.8	Back to Vertical
3778.0	4012.8	Start 2536.0 hold at 4012.8 MD
6313.9	6548.7	BHL: 39.4355795 -108.0468016
6314.0	6548.8	TD at 6548.8

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
3007.0	3211.4	Williams Fork	0.00	
3778.0	4012.8	Top Of Gas	0.00	
5396.0	5630.8	Cameo	0.00	
5814.0	6048.8	Rollins	0.00	

