



Ursa Operating Company, LLC

Rockies Region

BMC B

BMC B 22D-18-07-95

Wellbore #1

Plan: Design #1

Standard Planning Report

22 November, 2016



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well BMC B 22D-18-07-95
Company:	Ursa Operating Company, LLC	TVD Reference:	BMC B 22D-18-07-95 @ 5117.0usft (Est KB)
Project:	Rockies Region	MD Reference:	BMC B 22D-18-07-95 @ 5117.0usft (Est KB)
Site:	BMC B	North Reference:	True
Well:	BMC B 22D-18-07-95	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 B				
Site Position:		Northing:	1,594,816.33 usft	Latitude:	39.438867241
From:	Lat/Long	Easting:	2,280,886.96 usft	Longitude:	-108.046501442
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.61 °

Well	BMC B 22D-18-07-95, SHL 39.438809751 -108.046304645					
Well Position	+N/-S	-20.9 usft	Northing:	1,594,793.85 usft	Latitude:	39.438809751
	+E/-W	55.6 usft	Easting:	2,280,941.93 usft	Longitude:	-108.046304645
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	11/18/2016	9.78	65.54	51,563

Design	Design #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	106.18

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	
500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,218.0	25.13	106.18	1,195.2	-43.2	148.8	3.50	3.50	0.00	106.18	
3,358.2	25.13	106.18	3,132.8	-296.4	1,021.6	0.00	0.00	0.00	0.00	
4,076.2	0.00	0.00	3,828.0	-339.6	1,170.4	3.50	-3.50	0.00	180.00	22D-18-07-95 TGT
6,612.2	0.00	0.00	6,364.0	-339.6	1,170.4	0.00	0.00	0.00	0.00	

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Site:	BMC B	North Reference:	True
Well:	BMC B 22D-18-07-95	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: 39.438809751 -108.046304645									
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
Start Build 3.50									
600.0	3.50	106.18	599.9	-0.9	2.9	3.1	3.50	3.50	0.00
700.0	7.00	106.18	699.5	-3.4	11.7	12.2	3.50	3.50	0.00
800.0	10.50	106.18	798.3	-7.6	26.3	27.4	3.50	3.50	0.00
900.0	14.00	106.18	896.0	-13.6	46.7	48.6	3.50	3.50	0.00
1,000.0	17.50	106.18	992.3	-21.1	72.8	75.8	3.50	3.50	0.00
1,100.0	21.00	106.18	1,086.7	-30.3	104.4	108.7	3.50	3.50	0.00
1,200.0	24.50	106.18	1,178.9	-41.1	141.6	147.4	3.50	3.50	0.00
1,218.0	25.13	106.18	1,195.2	-43.2	148.8	154.9	3.49	3.49	0.00
Start 2140.2 hold at 1218 MD									
1,300.0	25.13	106.18	1,269.4	-52.9	182.3	189.8	0.00	0.00	0.00
1,400.0	25.13	106.18	1,360.0	-64.7	223.0	232.2	0.00	0.00	0.00
1,500.0	25.13	106.18	1,450.5	-76.6	263.8	274.7	0.00	0.00	0.00
1,600.0	25.13	106.18	1,541.0	-88.4	304.6	317.2	0.00	0.00	0.00
1,700.0	25.13	106.18	1,631.6	-100.2	345.4	359.6	0.00	0.00	0.00
1,775.6	25.13	106.18	1,700.0	-109.2	376.2	391.7	0.00	0.00	0.00
Surface Casing									
1,800.0	25.13	106.18	1,722.1	-112.1	386.2	402.1	0.00	0.00	0.00
1,900.0	25.13	106.18	1,812.7	-123.9	427.0	444.6	0.00	0.00	0.00
2,000.0	25.13	106.18	1,903.2	-135.7	467.7	487.0	0.00	0.00	0.00
2,100.0	25.13	106.18	1,993.7	-147.6	508.5	529.5	0.00	0.00	0.00
2,200.0	25.13	106.18	2,084.3	-159.4	549.3	572.0	0.00	0.00	0.00
2,300.0	25.13	106.18	2,174.8	-171.2	590.1	614.4	0.00	0.00	0.00
2,400.0	25.13	106.18	2,265.3	-183.1	630.9	656.9	0.00	0.00	0.00
2,500.0	25.13	106.18	2,355.9	-194.9	671.7	699.4	0.00	0.00	0.00
2,600.0	25.13	106.18	2,446.4	-206.7	712.4	741.8	0.00	0.00	0.00
2,700.0	25.13	106.18	2,536.9	-218.6	753.2	784.3	0.00	0.00	0.00
2,800.0	25.13	106.18	2,627.5	-230.4	794.0	826.8	0.00	0.00	0.00
2,900.0	25.13	106.18	2,718.0	-242.2	834.8	869.2	0.00	0.00	0.00
3,000.0	25.13	106.18	2,808.5	-254.1	875.6	911.7	0.00	0.00	0.00
3,100.0	25.13	106.18	2,899.1	-265.9	916.3	954.1	0.00	0.00	0.00
3,200.0	25.13	106.18	2,989.6	-277.7	957.1	996.6	0.00	0.00	0.00
3,274.4	25.13	106.18	3,057.0	-286.5	987.5	1,028.2	0.00	0.00	0.00
Williams Fork									
3,300.0	25.13	106.18	3,080.2	-289.6	997.9	1,039.1	0.00	0.00	0.00
3,358.2	25.13	106.18	3,132.8	-296.4	1,021.6	1,063.8	0.00	0.00	0.00
Start Drop -3.50									
3,400.0	23.67	106.18	3,170.9	-301.3	1,038.2	1,081.1	3.50	-3.50	0.00
3,500.0	20.17	106.18	3,263.7	-311.7	1,074.1	1,118.4	3.50	-3.50	0.00
3,600.0	16.67	106.18	3,358.5	-320.5	1,104.4	1,150.0	3.50	-3.50	0.00
3,700.0	13.17	106.18	3,455.1	-327.6	1,129.1	1,175.7	3.50	-3.50	0.00
3,800.0	9.67	106.18	3,553.2	-333.1	1,148.1	1,195.5	3.50	-3.50	0.00
3,900.0	6.17	106.18	3,652.2	-337.0	1,161.4	1,209.3	3.50	-3.50	0.00
4,000.0	2.67	106.18	3,751.9	-339.1	1,168.7	1,216.9	3.50	-3.50	0.00
4,076.2	0.00	0.00	3,828.0	-339.6	1,170.4	1,218.7	3.50	-3.50	-139.43

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Well:	BMC B 22D-18-07-95	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)
Back to Vertical - Start 2536.0 hold at 4076.2 MD - Top of Gas - 22D-18-07-95 TGT									
4,100.0	0.00	0.00	3,851.8	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
4,200.0	0.00	0.00	3,951.8	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
4,300.0	0.00	0.00	4,051.8	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
4,400.0	0.00	0.00	4,151.8	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
4,500.0	0.00	0.00	4,251.8	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
4,600.0	0.00	0.00	4,351.8	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
4,700.0	0.00	0.00	4,451.8	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
4,800.0	0.00	0.00	4,551.8	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
4,900.0	0.00	0.00	4,651.8	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
5,000.0	0.00	0.00	4,751.8	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
5,100.0	0.00	0.00	4,851.8	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
5,200.0	0.00	0.00	4,951.8	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
5,300.0	0.00	0.00	5,051.8	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
5,400.0	0.00	0.00	5,151.8	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
5,500.0	0.00	0.00	5,251.8	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
5,600.0	0.00	0.00	5,351.8	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
5,694.2	0.00	0.00	5,446.0	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
Cameo									
5,700.0	0.00	0.00	5,451.8	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
5,800.0	0.00	0.00	5,551.8	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
5,900.0	0.00	0.00	5,651.8	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
6,000.0	0.00	0.00	5,751.8	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
6,100.0	0.00	0.00	5,851.8	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
6,112.2	0.00	0.00	5,864.0	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
Rollins									
6,200.0	0.00	0.00	5,951.8	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
6,300.0	0.00	0.00	6,051.8	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
6,400.0	0.00	0.00	6,151.8	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
6,500.0	0.00	0.00	6,251.8	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
6,600.0	0.00	0.00	6,351.8	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
6,612.2	0.00	0.00	6,364.0	-339.6	1,170.4	1,218.7	0.00	0.00	0.00
TD at 6612.2 - BHL: 39.4378773 -108.0421607									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
22D-18-07-95 TGT	0.00	0.00	3,828.0	-339.6	1,170.4	1,594,421.58	2,282,102.34	39.437877300	-108.042160700
- hit/miss target									
- Shape									
- plan hits target center									
- Rectangle (sides W100.0 H40.0 D2,536.0)									

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Project:	Rockies Region	MD Reference:	BMC B 22D-18-07-95 @ 5117.0usft (Est KB)
Site:	BMC B	North Reference:	True
Well:	BMC B 22D-18-07-95	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,274.4	3,057.0	Williams Fork		0.00	
4,076.2	3,828.0	Top of Gas		0.00	
5,694.2	5,446.0	Cameo		0.00	
6,112.2	5,864.0	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: 39.438809751 -108.046304645	
500.0	500.0	0.0	0.0	Start Build 3.50	
1,218.0	1,195.2	-43.2	148.8	Start 2140.2 hold at 1218 MD	
1,775.6	1,700.0	-109.2	376.2	Surface Casing	
3,358.2	3,132.8	-296.4	1,021.6	Start Drop -3.50	
4,076.2	3,828.0	-339.6	1,170.4	Back to Vertical	
4,076.2	3,828.0	-339.6	1,170.4	Start 2536.0 hold at 4076.2 MD	
6,612.2	6,364.0	-339.6	1,170.4	TD at 6612.2	
6,612.2	6,364.0	-339.6	1,170.4	BHL: 39.4378773 -108.0421607	

