



Ursa Operating Company, LLC

Rockies Region

BMC B

BMC B 22D-18-07-95

Wellbore #1

Plan: Design #1

Standard Planning Report

28 October, 2015



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 (PLAN KB)
Project:	Rockies Region	MD Reference:	BMC B 22D-18-07-95 @ 5117.0usft (PLAN 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		

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 22D-18-07-95, SHL LAT: 39.438807445 LONG: -108.046410772					
Well Position	+N/-S	-21.8 usft	Northing:	1,594,793.84 usft	Latitude:	39° 26' 19.707 N
	+E/-W	25.6 usft	Easting:	2,280,911.94 usft	Longitude:	108° 2' 47.079 W
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)
	IGRF2010	10/23/2015	9.81	65.56	51,780

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	105.76	

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	
1,237.8	25.82	105.76	1,213.1	-44.4	157.3	3.50	3.50	0.00	105.76	
3,350.6	25.82	105.76	3,114.9	-294.4	1,043.0	0.00	0.00	0.00	0.00	
4,088.4	0.00	0.00	3,828.0	-338.8	1,200.4	3.50	-3.50	0.00	180.00	22D-18-07-95 TGT
6,624.4	0.00	0.00	6,364.0	-338.8	1,200.4	0.00	0.00	0.00	0.00	

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 (PLAN KB)
Project:	Rockies Region	MD Reference:	BMC B 22D-18-07-95 @ 5117.0usft (PLAN 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		

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: 39.438807445 -108.046410772										
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	105.76	599.9	-0.8	2.9	3.1	3.50	3.50	0.00	
700.0	7.00	105.76	699.5	-3.3	11.7	12.2	3.50	3.50	0.00	
800.0	10.50	105.76	798.3	-7.4	26.4	27.4	3.50	3.50	0.00	
900.0	14.00	105.76	896.0	-13.2	46.8	48.6	3.50	3.50	0.00	
1,000.0	17.50	105.76	992.3	-20.6	72.9	75.8	3.50	3.50	0.00	
1,100.0	21.00	105.76	1,086.7	-29.5	104.6	108.7	3.50	3.50	0.00	
1,200.0	24.50	105.76	1,178.9	-40.0	141.9	147.4	3.50	3.50	0.00	
1,237.8	25.82	105.76	1,213.1	-44.4	157.3	163.5	3.50	3.50	0.00	
Start 2112.8 hold at 1237.8 MD										
1,300.0	25.82	105.76	1,269.1	-51.8	183.4	190.6	0.00	0.00	0.00	
1,400.0	25.82	105.76	1,359.1	-63.6	225.3	234.1	0.00	0.00	0.00	
1,500.0	25.82	105.76	1,449.1	-75.4	267.2	277.7	0.00	0.00	0.00	
1,600.0	25.82	105.76	1,539.1	-87.2	309.2	321.2	0.00	0.00	0.00	
1,700.0	25.82	105.76	1,629.1	-99.1	351.1	364.8	0.00	0.00	0.00	
1,778.7	25.82	105.76	1,700.0	-108.4	384.1	399.1	0.00	0.00	0.00	
Surface Casing										
1,800.0	25.82	105.76	1,719.1	-110.9	393.0	408.4	0.00	0.00	0.00	
1,900.0	25.82	105.76	1,809.2	-122.7	434.9	451.9	0.00	0.00	0.00	
2,000.0	25.82	105.76	1,899.2	-134.6	476.8	495.5	0.00	0.00	0.00	
2,100.0	25.82	105.76	1,989.2	-146.4	518.8	539.0	0.00	0.00	0.00	
2,200.0	25.82	105.76	2,079.2	-158.2	560.7	582.6	0.00	0.00	0.00	
2,300.0	25.82	105.76	2,169.2	-170.1	602.6	626.1	0.00	0.00	0.00	
2,400.0	25.82	105.76	2,259.2	-181.9	644.5	669.7	0.00	0.00	0.00	
2,500.0	25.82	105.76	2,349.2	-193.7	686.5	713.3	0.00	0.00	0.00	
2,600.0	25.82	105.76	2,439.3	-205.6	728.4	756.8	0.00	0.00	0.00	
2,700.0	25.82	105.76	2,529.3	-217.4	770.3	800.4	0.00	0.00	0.00	
2,800.0	25.82	105.76	2,619.3	-229.2	812.2	843.9	0.00	0.00	0.00	
2,900.0	25.82	105.76	2,709.3	-241.0	854.1	887.5	0.00	0.00	0.00	
3,000.0	25.82	105.76	2,799.3	-252.9	896.1	931.1	0.00	0.00	0.00	
3,100.0	25.82	105.76	2,889.3	-264.7	938.0	974.6	0.00	0.00	0.00	
3,200.0	25.82	105.76	2,979.3	-276.5	979.9	1,018.2	0.00	0.00	0.00	
3,286.3	25.82	105.76	3,057.0	-286.7	1,016.1	1,055.7	0.00	0.00	0.00	
Williams Fork										
3,300.0	25.82	105.76	3,069.4	-288.4	1,021.8	1,061.7	0.00	0.00	0.00	
3,350.6	25.82	105.76	3,114.9	-294.4	1,043.0	1,083.8	0.00	0.00	0.00	
Start Drop -3.50										
3,400.0	24.09	105.76	3,159.7	-300.0	1,063.1	1,104.6	3.50	-3.50	0.00	
3,500.0	20.59	105.76	3,252.2	-310.3	1,099.7	1,142.6	3.50	-3.50	0.00	
3,600.0	17.09	105.76	3,346.8	-319.1	1,130.8	1,174.9	3.50	-3.50	0.00	
3,700.0	13.59	105.76	3,443.2	-326.3	1,156.2	1,201.4	3.50	-3.50	0.00	
3,800.0	10.09	105.76	3,541.1	-331.9	1,176.0	1,221.9	3.50	-3.50	0.00	
3,900.0	6.59	105.76	3,640.0	-335.8	1,189.9	1,236.4	3.50	-3.50	0.00	

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Project:	Rockies Region	MD Reference:	BMC B 22D-18-07-95 @ 5117.0usft (PLAN 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		

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	3.09	105.76	3,739.6	-338.1	1,198.1	1,244.9	3.50	-3.50	0.00
4,088.4	0.00	0.00	3,828.0	-338.8	1,200.4	1,247.2	3.50	-3.50	0.00
Back to Vertical - Start 2536.0 hold at 4088.4 MD - Top of Gas									
4,100.0	0.00	0.00	3,839.6	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
4,200.0	0.00	0.00	3,939.6	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
4,300.0	0.00	0.00	4,039.6	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
4,400.0	0.00	0.00	4,139.6	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
4,500.0	0.00	0.00	4,239.6	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
4,600.0	0.00	0.00	4,339.6	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
4,700.0	0.00	0.00	4,439.6	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
4,800.0	0.00	0.00	4,539.6	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
4,900.0	0.00	0.00	4,639.6	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
5,000.0	0.00	0.00	4,739.6	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
5,100.0	0.00	0.00	4,839.6	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
5,200.0	0.00	0.00	4,939.6	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
5,300.0	0.00	0.00	5,039.6	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
5,400.0	0.00	0.00	5,139.6	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
5,500.0	0.00	0.00	5,239.6	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
5,600.0	0.00	0.00	5,339.6	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
5,700.0	0.00	0.00	5,439.6	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
5,706.4	0.00	0.00	5,446.0	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
Cameo									
5,800.0	0.00	0.00	5,539.6	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
5,900.0	0.00	0.00	5,639.6	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
6,000.0	0.00	0.00	5,739.6	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
6,100.0	0.00	0.00	5,839.6	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
6,124.4	0.00	0.00	5,864.0	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
Rollins									
6,200.0	0.00	0.00	5,939.6	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
6,300.0	0.00	0.00	6,039.6	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
6,400.0	0.00	0.00	6,139.6	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
6,500.0	0.00	0.00	6,239.6	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
6,600.0	0.00	0.00	6,339.6	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
6,624.3	0.00	0.00	6,363.9	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
BHL: 39.4378773 -108.0421607									
6,624.4	0.00	0.00	6,364.0	-338.8	1,200.4	1,247.2	0.00	0.00	0.00
TD at 6624.4									

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									
22D-18-07-95 TGT	0.00	0.00	3,828.0	-338.8	1,200.4	1,594,421.58	2,282,102.34	39° 26' 16.358 N	108° 2' 31.779 W
- 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 (PLAN 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		

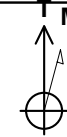
Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,286.3	3,057.0	Williams Fork		0.00		
4,088.4	3,828.0	Top of Gas		0.00		
5,706.4	5,446.0	Cameo		0.00		
6,124.4	5,864.0	Rollins		0.00		

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: 39.438807445 -108.046410772	
500.0	500.0	0.0	0.0	Start Build 3.50	
1,237.8	1,213.1	-44.4	157.3	Start 2112.8 hold at 1237.8 MD	
1,778.7	1,700.0	-108.4	384.1	Surface Casing	
3,350.6	3,114.9	-294.4	1,043.0	Start Drop -3.50	
4,088.4	3,828.0	-338.8	1,200.4	Back to Vertical	
4,088.4	3,828.0	-338.8	1,200.4	Start 2536.0 hold at 4088.4 MD	
6,624.3	6,363.9	-338.8	1,200.4	BHL: 39.4378773 -108.0421607	
6,624.4	6,364.0	-338.8	1,200.4	TD at 6624.4	



Well Name: BMC B 22D-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 2280911.94 39° 26' 19.707 N 108° 2' 47.079 W
PLAN KB BMC B 22D-18-07-95 @ 5117.0usft (PLAN KB)

Slot



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

BMC B
BMC B 22D-18-07-95
Design #1
11:11, October 28 2015

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
22D-18-07-95 TGT	3828.0	-338.8	1200.4	1594421.58	2282102.34	39° 26' 16.358 N	108° 2' 31.779 W	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	500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.0	
3	1237.8	25.82	105.76	1213.1	-44.4	157.3	3.50	105.76	163.5	
4	3350.6	25.82	105.76	3114.9	-294.4	1043.0	0.00	0.00	1083.8	
5	4088.4	0.00	0.00	3828.0	-338.8	1200.4	3.50	180.00	1247.2	22D-18-07-95 TGT
6	6624.4	0.00	0.00	6364.0	-338.8	1200.4	0.00	0.00	1247.2	

ANNOTATIONS

TVD	MD	Annotation
0.1	0.1	SHL: 39.438807445 -108.046410772
500.0	500.0	Start Build 3.50
1213.1	1237.8	Start 2112.8 hold at 1237.8 MD
1700.0	1778.7	Surface Casing
3114.9	3350.6	Start Drop -3.50
3828.0	4088.4	Back to Vertical
3828.0	4088.4	Start 2536.0 hold at 4088.4 MD
6363.9	6624.3	BHL: 39.4378773 -108.0421607
6364.0	6624.4	TD at 6624.4

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
3057.0	3286.3	Williams Fork	0.00	
3828.0	4088.4	Top of Gas	0.00	
5446.0	5706.4	Cameo	0.00	
5864.0	6124.4	Rollins	0.00	

