



Ursa Operating Company, LLC

Rockies Region

BMC B

BMC B 22A-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 22A-18-07-95
Company:	Ursa Operating Company, LLC	TVD Reference:	BMC B 22A-18-07-95 @ 5117.0usft (PLAN KB)
Project:	Rockies Region	MD Reference:	BMC B 22A-18-07-95 @ 5117.0usft (PLAN KB)
Site:	BMC B	North Reference:	True
Well:	BMC B 22A-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 22A-18-07-95, SHL LAT: 39.438864934 LONG: -108.046607569					
Well Position	+N/-S	-0.8 usft	Northing:	1,594,816.33 usft	Latitude:	39° 26' 19.914 N
	+E/-W	-30.0 usft	Easting:	2,280,856.97 usft	Longitude:	108° 2' 47.787 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	63.19	

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	
1,319.4	28.68	63.19	1,285.6	90.6	179.2	3.50	3.50	0.00	63.19	
3,394.8	28.68	63.19	3,106.4	539.8	1,068.2	0.00	0.00	0.00	0.00	
4,214.2	0.00	0.00	3,892.0	630.4	1,247.4	3.50	-3.50	0.00	180.00	22A-18-07-95 TGT
6,750.2	0.00	0.00	6,428.0	630.4	1,247.4	0.00	0.00	0.00	0.00	

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Well:	BMC B 22A-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: 39.438864934 -108.046607569										
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	63.19	599.9	1.4	2.7	3.1	3.50	3.50	0.00	
700.0	7.00	63.19	699.5	5.5	10.9	12.2	3.50	3.50	0.00	
800.0	10.50	63.19	798.3	12.4	24.5	27.4	3.50	3.50	0.00	
900.0	14.00	63.19	896.0	21.9	43.4	48.6	3.50	3.50	0.00	
1,000.0	17.50	63.19	992.3	34.2	67.6	75.8	3.50	3.50	0.00	
1,100.0	21.00	63.19	1,086.7	49.0	97.0	108.7	3.50	3.50	0.00	
1,200.0	24.50	63.19	1,178.9	66.5	131.6	147.4	3.50	3.50	0.00	
1,300.0	28.00	63.19	1,268.5	86.4	171.0	191.6	3.50	3.50	0.00	
1,319.4	28.68	63.19	1,285.6	90.6	179.2	200.8	3.50	3.50	0.00	
Start 2075.4 hold at 1319.4 MD										
1,400.0	28.68	63.19	1,356.3	108.0	213.8	239.5	0.00	0.00	0.00	
1,500.0	28.68	63.19	1,444.1	129.7	256.6	287.5	0.00	0.00	0.00	
1,600.0	28.68	63.19	1,531.8	151.3	299.4	335.5	0.00	0.00	0.00	
1,700.0	28.68	63.19	1,619.5	173.0	342.3	383.5	0.00	0.00	0.00	
1,791.7	28.68	63.19	1,700.0	192.8	381.5	427.5	0.00	0.00	0.00	
Surface Casing										
1,800.0	28.68	63.19	1,707.3	194.6	385.1	431.5	0.00	0.00	0.00	
1,900.0	28.68	63.19	1,795.0	216.3	427.9	479.5	0.00	0.00	0.00	
2,000.0	28.68	63.19	1,882.7	237.9	470.7	527.4	0.00	0.00	0.00	
2,100.0	28.68	63.19	1,970.4	259.6	513.6	575.4	0.00	0.00	0.00	
2,200.0	28.68	63.19	2,058.2	281.2	556.4	623.4	0.00	0.00	0.00	
2,300.0	28.68	63.19	2,145.9	302.8	599.2	671.4	0.00	0.00	0.00	
2,400.0	28.68	63.19	2,233.6	324.5	642.1	719.4	0.00	0.00	0.00	
2,500.0	28.68	63.19	2,321.4	346.1	684.9	767.4	0.00	0.00	0.00	
2,600.0	28.68	63.19	2,409.1	367.8	727.7	815.4	0.00	0.00	0.00	
2,700.0	28.68	63.19	2,496.8	389.4	770.6	863.4	0.00	0.00	0.00	
2,800.0	28.68	63.19	2,584.6	411.1	813.4	911.4	0.00	0.00	0.00	
2,900.0	28.68	63.19	2,672.3	432.7	856.2	959.4	0.00	0.00	0.00	
3,000.0	28.68	63.19	2,760.0	454.4	899.1	1,007.4	0.00	0.00	0.00	
3,100.0	28.68	63.19	2,847.8	476.0	941.9	1,055.3	0.00	0.00	0.00	
3,200.0	28.68	63.19	2,935.5	497.7	984.7	1,103.3	0.00	0.00	0.00	
3,300.0	28.68	63.19	3,023.2	519.3	1,027.6	1,151.3	0.00	0.00	0.00	
3,394.8	28.68	63.19	3,106.4	539.8	1,068.2	1,196.8	0.00	0.00	0.00	
Start Drop -3.50										
3,400.0	28.50	63.19	3,111.0	540.9	1,070.4	1,199.3	3.50	-3.50	0.00	
3,411.4	28.10	63.19	3,121.0	543.4	1,075.2	1,204.7	3.50	-3.50	0.00	
Williams Fork										
3,500.0	25.00	63.19	3,200.3	561.2	1,110.5	1,244.3	3.50	-3.50	0.00	
3,600.0	21.50	63.19	3,292.1	579.0	1,145.8	1,283.8	3.50	-3.50	0.00	
3,700.0	18.00	63.19	3,386.2	594.3	1,175.9	1,317.6	3.50	-3.50	0.00	
3,800.0	14.50	63.19	3,482.2	606.9	1,200.9	1,345.5	3.50	-3.50	0.00	
3,900.0	11.00	63.19	3,579.7	616.8	1,220.6	1,367.6	3.50	-3.50	0.00	

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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	7.50	63.19	3,678.4	624.1	1,234.9	1,383.6	3.50	-3.50	0.00
4,100.0	4.00	63.19	3,777.9	628.6	1,243.8	1,393.7	3.50	-3.50	0.00
4,200.0	0.50	63.19	3,877.8	630.4	1,247.3	1,397.6	3.50	-3.50	0.00
4,214.2	0.00	0.00	3,892.0	630.4	1,247.4	1,397.6	3.50	-3.50	-445.40
Back to Vertical - Start 2536.0 hold at 4214.2 MD - Top of Gas									
4,300.0	0.00	0.00	3,977.8	630.4	1,247.4	1,397.6	0.00	0.00	0.00
4,400.0	0.00	0.00	4,077.8	630.4	1,247.4	1,397.6	0.00	0.00	0.00
4,500.0	0.00	0.00	4,177.8	630.4	1,247.4	1,397.6	0.00	0.00	0.00
4,600.0	0.00	0.00	4,277.8	630.4	1,247.4	1,397.6	0.00	0.00	0.00
4,700.0	0.00	0.00	4,377.8	630.4	1,247.4	1,397.6	0.00	0.00	0.00
4,800.0	0.00	0.00	4,477.8	630.4	1,247.4	1,397.6	0.00	0.00	0.00
4,900.0	0.00	0.00	4,577.8	630.4	1,247.4	1,397.6	0.00	0.00	0.00
5,000.0	0.00	0.00	4,677.8	630.4	1,247.4	1,397.6	0.00	0.00	0.00
5,100.0	0.00	0.00	4,777.8	630.4	1,247.4	1,397.6	0.00	0.00	0.00
5,200.0	0.00	0.00	4,877.8	630.4	1,247.4	1,397.6	0.00	0.00	0.00
5,300.0	0.00	0.00	4,977.8	630.4	1,247.4	1,397.6	0.00	0.00	0.00
5,400.0	0.00	0.00	5,077.8	630.4	1,247.4	1,397.6	0.00	0.00	0.00
5,500.0	0.00	0.00	5,177.8	630.4	1,247.4	1,397.6	0.00	0.00	0.00
5,600.0	0.00	0.00	5,277.8	630.4	1,247.4	1,397.6	0.00	0.00	0.00
5,700.0	0.00	0.00	5,377.8	630.4	1,247.4	1,397.6	0.00	0.00	0.00
5,800.0	0.00	0.00	5,477.8	630.4	1,247.4	1,397.6	0.00	0.00	0.00
5,832.2	0.00	0.00	5,510.0	630.4	1,247.4	1,397.6	0.00	0.00	0.00
Cameo									
5,900.0	0.00	0.00	5,577.8	630.4	1,247.4	1,397.6	0.00	0.00	0.00
6,000.0	0.00	0.00	5,677.8	630.4	1,247.4	1,397.6	0.00	0.00	0.00
6,100.0	0.00	0.00	5,777.8	630.4	1,247.4	1,397.6	0.00	0.00	0.00
6,200.0	0.00	0.00	5,877.8	630.4	1,247.4	1,397.6	0.00	0.00	0.00
6,250.2	0.00	0.00	5,928.0	630.4	1,247.4	1,397.6	0.00	0.00	0.00
Rollins									
6,300.0	0.00	0.00	5,977.8	630.4	1,247.4	1,397.6	0.00	0.00	0.00
6,400.0	0.00	0.00	6,077.8	630.4	1,247.4	1,397.6	0.00	0.00	0.00
6,500.0	0.00	0.00	6,177.8	630.4	1,247.4	1,397.6	0.00	0.00	0.00
6,600.0	0.00	0.00	6,277.8	630.4	1,247.4	1,397.6	0.00	0.00	0.00
6,700.0	0.00	0.00	6,377.8	630.4	1,247.4	1,397.6	0.00	0.00	0.00
6,750.1	0.00	0.00	6,427.9	630.4	1,247.4	1,397.6	0.00	0.00	0.00
BHL: 39.4405956 -108.0421908									
6,750.2	0.00	0.00	6,428.0	630.4	1,247.4	1,397.6	0.00	0.00	0.00
TD at 6750.2									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
22A-18-07-95 TGT	0.00	0.00	3,892.0	630.4	1,247.4	1,595,411.52	2,282,121.55	39° 26' 26.144 N	108° 2' 31.887 W
- hit/miss target									
- Shape									
- plan hits target center									
- Rectangle (sides W100.0 H40.0 D2,536.0)									

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Site:	BMC B	North Reference:	True
Well:	BMC B 22A-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 (°)
3,411.4	3,121.0	Williams Fork		0.00	
4,214.2	3,892.0	Top of Gas		0.00	
5,832.2	5,510.0	Cameo		0.00	
6,250.2	5,928.0	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: 39.438864934 -108.046607569	
500.0	500.0	0.0	0.0	Start Build 3.50	
1,319.4	1,285.6	90.6	179.2	Start 2075.4 hold at 1319.4 MD	
1,791.7	1,700.0	192.8	381.5	Surface Casing	
3,394.8	3,106.4	539.8	1,068.2	Start Drop -3.50	
4,214.2	3,892.0	630.4	1,247.4	Back to Vertical	
4,214.2	3,892.0	630.4	1,247.4	Start 2536.0 hold at 4214.2 MD	
6,750.1	6,427.9	630.4	1,247.4	BHL: 39.4405956 -108.0421908	
6,750.2	6,428.0	630.4	1,247.4	TD at 6750.2	

