



# **Ursa Operating Company, LLC**

**Rockies Region**

**BMC D**

**BMC D 32B-18-07-95**

**Wellbore #1**

**Plan: Design #1**

## **Standard Planning Report**

**30 October, 2015**



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well BMC D 32B-18-07-95
<b>Company:</b>	Ursa Operating Company, LLC	<b>TVD Reference:</b>	BMC D 32B-18-07-95 @ 5282.0usft (PLAN KB)
<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	BMC D 32B-18-07-95 @ 5282.0usft (PLAN KB)
<b>Site:</b>	BMC D	<b>North Reference:</b>	True
<b>Well:</b>	BMC D 32B-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 D			
Site Position:		Northing:	1,595,755.80 usft	Latitude:	39° 26' 29.662 N
From:	Lat/Long	Easting:	2,282,541.08 usft	Longitude:	108° 2' 26.664 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.60 °

Well	BMC D 32B-18-07-95, SHL: 39.441482141 -108.040763287					
Well Position	+N/-S	-33.0 usft	Northing:	1,595,723.02 usft	Latitude:	39° 26' 29.336 N
	+E/-W	-6.6 usft	Easting:	2,282,533.58 usft	Longitude:	108° 2' 26.748 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	5,282.0 usft	Ground Level:	5,265.0 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	10/29/2015	9.80	65.57	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	116.81	

<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	
300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.00	0.00	
799.7	17.49	116.81	792.0	-34.1	67.5	3.50	3.50	0.00	116.81	
3,715.6	17.49	116.81	3,573.0	-429.4	849.6	0.00	0.00	0.00	0.00	
4,215.2	0.00	0.00	4,065.0	-463.6	917.1	3.50	-3.50	0.00	180.00	BMC D 32B-18-07-95
6,751.2	0.00	0.00	6,601.0	-463.6	917.1	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 D 32B-18-07-95
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<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	BMC D 32B-18-07-95 @ 5282.0usft (PLAN KB)
<b>Site:</b>	BMC D	<b>North Reference:</b>	True
<b>Well:</b>	BMC D 32B-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: 39.441482141 -108.040763287</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
<b>Start Build 3.50</b>									
400.0	3.50	116.81	399.9	-1.4	2.7	3.1	3.50	3.50	0.00
500.0	7.00	116.81	499.5	-5.5	10.9	12.2	3.50	3.50	0.00
600.0	10.50	116.81	598.3	-12.4	24.5	27.4	3.50	3.50	0.00
700.0	14.00	116.81	696.0	-21.9	43.4	48.6	3.50	3.50	0.00
799.7	17.49	116.81	792.0	-34.1	67.5	75.7	3.50	3.50	0.00
<b>Start 2915.9 hold at 799.7 MD</b>									
900.0	17.49	116.81	887.6	-47.7	94.4	105.8	0.00	0.00	0.00
1,000.0	17.49	116.81	983.0	-61.3	121.3	135.9	0.00	0.00	0.00
1,100.0	17.49	116.81	1,078.4	-74.8	148.1	165.9	0.00	0.00	0.00
1,200.0	17.49	116.81	1,173.8	-88.4	174.9	196.0	0.00	0.00	0.00
1,300.0	17.49	116.81	1,269.2	-102.0	201.7	226.0	0.00	0.00	0.00
1,400.0	17.49	116.81	1,364.5	-115.5	228.5	256.1	0.00	0.00	0.00
1,500.0	17.49	116.81	1,459.9	-129.1	255.4	286.1	0.00	0.00	0.00
1,600.0	17.49	116.81	1,555.3	-142.6	282.2	316.2	0.00	0.00	0.00
1,700.0	17.49	116.81	1,650.7	-156.2	309.0	346.2	0.00	0.00	0.00
1,751.7	17.49	116.81	1,700.0	-163.2	322.9	361.8	0.00	0.00	0.00
<b>Surface Casing</b>									
1,800.0	17.49	116.81	1,746.0	-169.7	335.8	376.3	0.00	0.00	0.00
1,900.0	17.49	116.81	1,841.4	-183.3	362.6	406.3	0.00	0.00	0.00
2,000.0	17.49	116.81	1,936.8	-196.9	389.5	436.4	0.00	0.00	0.00
2,100.0	17.49	116.81	2,032.2	-210.4	416.3	466.4	0.00	0.00	0.00
2,200.0	17.49	116.81	2,127.5	-224.0	443.1	496.5	0.00	0.00	0.00
2,300.0	17.49	116.81	2,222.9	-237.5	469.9	526.5	0.00	0.00	0.00
2,400.0	17.49	116.81	2,318.3	-251.1	496.7	556.6	0.00	0.00	0.00
2,500.0	17.49	116.81	2,413.7	-264.6	523.6	586.6	0.00	0.00	0.00
2,600.0	17.49	116.81	2,509.1	-278.2	550.4	616.7	0.00	0.00	0.00
2,700.0	17.49	116.81	2,604.4	-291.7	577.2	646.7	0.00	0.00	0.00
2,800.0	17.49	116.81	2,699.8	-305.3	604.0	676.8	0.00	0.00	0.00
2,900.0	17.49	116.81	2,795.2	-318.9	630.8	706.9	0.00	0.00	0.00
3,000.0	17.49	116.81	2,890.6	-332.4	657.7	736.9	0.00	0.00	0.00
3,100.0	17.49	116.81	2,985.9	-346.0	684.5	767.0	0.00	0.00	0.00
3,200.0	17.49	116.81	3,081.3	-359.5	711.3	797.0	0.00	0.00	0.00
3,300.0	17.49	116.81	3,176.7	-373.1	738.1	827.1	0.00	0.00	0.00
3,400.0	17.49	116.81	3,272.1	-386.6	764.9	857.1	0.00	0.00	0.00
3,423.0	17.49	116.81	3,294.0	-389.8	771.1	864.0	0.00	0.00	0.00
<b>Williams Fork</b>									
3,500.0	17.49	116.81	3,367.5	-400.2	791.8	887.2	0.00	0.00	0.00
3,600.0	17.49	116.81	3,462.8	-413.8	818.6	917.2	0.00	0.00	0.00
3,700.0	17.49	116.81	3,558.2	-427.3	845.4	947.3	0.00	0.00	0.00
3,715.6	17.49	116.81	3,573.0	-429.4	849.6	951.9	0.00	0.00	0.00
<b>Start Drop -3.50</b>									
3,800.0	14.53	116.81	3,654.2	-439.9	870.4	975.2	3.50	-3.50	0.00
3,900.0	11.03	116.81	3,751.7	-449.9	890.1	997.3	3.50	-3.50	0.00
4,000.0	7.53	116.81	3,850.4	-457.2	904.5	1,013.5	3.50	-3.50	0.00

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<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	BMC D 32B-18-07-95 @ 5282.0usft (PLAN KB)
<b>Site:</b>	BMC D	<b>North Reference:</b>	True
<b>Well:</b>	BMC D 32B-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	4.03	116.81	3,949.9	-461.7	913.5	1,023.6	3.50	-3.50	0.00
4,200.0	0.53	116.81	4,049.8	-463.5	917.0	1,027.5	3.50	-3.50	0.00
4,215.2	0.00	0.00	4,065.0	-463.6	917.1	1,027.6	3.50	-3.50	-767.14
<b>Back to Vertical - Start 2536.0 hold at 4215.2 MD - Top of Gas</b>									
4,300.0	0.00	0.00	4,149.8	-463.6	917.1	1,027.6	0.00	0.00	0.00
4,400.0	0.00	0.00	4,249.8	-463.6	917.1	1,027.6	0.00	0.00	0.00
4,500.0	0.00	0.00	4,349.8	-463.6	917.1	1,027.6	0.00	0.00	0.00
4,600.0	0.00	0.00	4,449.8	-463.6	917.1	1,027.6	0.00	0.00	0.00
4,700.0	0.00	0.00	4,549.8	-463.6	917.1	1,027.6	0.00	0.00	0.00
4,800.0	0.00	0.00	4,649.8	-463.6	917.1	1,027.6	0.00	0.00	0.00
4,900.0	0.00	0.00	4,749.8	-463.6	917.1	1,027.6	0.00	0.00	0.00
5,000.0	0.00	0.00	4,849.8	-463.6	917.1	1,027.6	0.00	0.00	0.00
5,100.0	0.00	0.00	4,949.8	-463.6	917.1	1,027.6	0.00	0.00	0.00
5,200.0	0.00	0.00	5,049.8	-463.6	917.1	1,027.6	0.00	0.00	0.00
5,300.0	0.00	0.00	5,149.8	-463.6	917.1	1,027.6	0.00	0.00	0.00
5,400.0	0.00	0.00	5,249.8	-463.6	917.1	1,027.6	0.00	0.00	0.00
5,500.0	0.00	0.00	5,349.8	-463.6	917.1	1,027.6	0.00	0.00	0.00
5,600.0	0.00	0.00	5,449.8	-463.6	917.1	1,027.6	0.00	0.00	0.00
5,700.0	0.00	0.00	5,549.8	-463.6	917.1	1,027.6	0.00	0.00	0.00
5,800.0	0.00	0.00	5,649.8	-463.6	917.1	1,027.6	0.00	0.00	0.00
5,833.2	0.00	0.00	5,683.0	-463.6	917.1	1,027.6	0.00	0.00	0.00
<b>Cameo</b>									
5,900.0	0.00	0.00	5,749.8	-463.6	917.1	1,027.6	0.00	0.00	0.00
6,000.0	0.00	0.00	5,849.8	-463.6	917.1	1,027.6	0.00	0.00	0.00
6,100.0	0.00	0.00	5,949.8	-463.6	917.1	1,027.6	0.00	0.00	0.00
6,200.0	0.00	0.00	6,049.8	-463.6	917.1	1,027.6	0.00	0.00	0.00
6,251.2	0.00	0.00	6,101.0	-463.6	917.1	1,027.6	0.00	0.00	0.00
<b>Rollins</b>									
6,300.0	0.00	0.00	6,149.8	-463.6	917.1	1,027.6	0.00	0.00	0.00
6,400.0	0.00	0.00	6,249.8	-463.6	917.1	1,027.6	0.00	0.00	0.00
6,500.0	0.00	0.00	6,349.8	-463.6	917.1	1,027.6	0.00	0.00	0.00
6,600.0	0.00	0.00	6,449.8	-463.6	917.1	1,027.6	0.00	0.00	0.00
6,700.0	0.00	0.00	6,549.8	-463.6	917.1	1,027.6	0.00	0.00	0.00
6,751.1	0.00	0.00	6,600.9	-463.6	917.1	1,027.6	0.00	0.00	0.00
<b>BHL: 39.4402094 -108.037516</b>									
6,751.2	0.00	0.00	6,601.0	-463.6	917.1	1,027.6	0.00	0.00	0.00
<b>TD at 6751.2 - TD</b>									

## 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									
BMC D 32B-18-07-95 T(	0.00	0.00	4,065.0	-463.6	917.1	1,595,234.00	2,283,437.37	39° 26' 24.754 N	108° 2' 15.058 W
- plan hits target center									
- Rectangle (sides W100.0 H40.0 D2,536.0)									

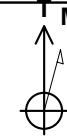
<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well BMC D 32B-18-07-95
<b>Company:</b>	Ursa Operating Company, LLC	<b>TVD Reference:</b>	BMC D 32B-18-07-95 @ 5282.0usft (PLAN KB)
<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	BMC D 32B-18-07-95 @ 5282.0usft (PLAN KB)
<b>Site:</b>	BMC D	<b>North Reference:</b>	True
<b>Well:</b>	BMC D 32B-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 (°)	
3,423.0	3,294.0	Williams Fork		0.00		
4,215.2	4,065.0	Top of Gas		0.00		
5,833.2	5,683.0	Cameo		0.00		
6,251.2	6,101.0	Rollins		0.00		
6,751.2	6,601.0	TD		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: 39.441482141 -108.040763287	
300.0	300.0	0.0	0.0	Start Build 3.50	
799.7	792.0	-34.1	67.5	Start 2915.9 hold at 799.7 MD	
1,751.7	1,700.0	-163.2	322.9	Surface Casing	
3,715.6	3,573.0	-429.4	849.6	Start Drop -3.50	
4,215.2	4,065.0	-463.6	917.1	Back to Vertical	
4,215.2	4,065.0	-463.6	917.1	Start 2536.0 hold at 4215.2 MD	
6,751.1	6,600.9	-463.6	917.1	BHL: 39.4402094 -108.037516	
6,751.2	6,601.0	-463.6	917.1	TD at 6751.2	



Well Name: BMC D 32B-18-07-95  
Surface Location: BMC D  
North American Datum 1983, US State Plane 1983, Colorado Central Zone  
Ground Elevation: 5265.0  
+N/-S +E/-W Northing Easting Latitude Longitude  
0.0 0.0 1595723.02 2282533.58 39° 26' 29.336 N 108° 2' 26.748 W  
PLAN KB BMC D 32B-18-07-95 @ 5282.0usft (PLAN KB)



Azinuths to True North  
Magnetic North: 9.80°  
Magnetic Field  
Strength: 51779.6snT  
Dip Angle: 65.57°  
Date: 10/29/2015  
Model: IGRF2010

BMC D  
BMC D 32B-18-07-95  
Design #1  
9:46, October 30 2015

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
BMC D 32B-18-07-95 TGT	4065.0	-463.6	917.1	1595234.01	2283437.379	39° 26' 24.754 N	108° 2' 15.058 W	Rectangle (Sides: L40.0 W100.0)

#### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VFace	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	799.7	17.49	116.81	792.0	-34.1	67.5	3.50	116.81	75.7	
4	3715.6	17.49	116.81	3573.0	-429.4	849.6	0.00	0.00	951.9	
5	4215.2	0.00	0.00	4065.0	-463.6	917.1	3.50	180.00	1027.6	BMC D 32B-18-07-95 TGT
6	6751.2	0.00	0.00	6601.0	-463.6	917.1	0.00	0.00	1027.6	

#### ANNOTATIONS

TVD	MD	Annotation
0.1	0.1	SHL: 39.441482141 -108.040763287
300.0	300.0	Start Build 3.50
792.0	799.7	Start 2915.9 hold at 799.7 MD
1700.0	1751.7	Surface Casing
3573.0	3715.6	Start Drop -3.50
4065.0	4215.2	Back to Vertical
4065.0	4215.2	Start 2536.0 hold at 4215.2 MD
6600.9	6751.1	BHL: 39.4402094 -108.037516
6601.0	6751.2	TD at 6751.2

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
3294.0	3423.0	Williams Fork	0.00	
4065.0	4215.2	Top of Gas	0.00	
5683.0	5833.2	Cameo	0.00	
6101.0	6251.2	Rollins	0.00	
6601.0	6751.2	TD	0.00	

