



# **Ursa Operating Company, LLC**

**Rockies Region**

**BMC L Pad**

**BMC L 14D-08-07-95**

**Wellbore #1**

**Plan: Design #1**

## **Standard Planning Report**

**15 May, 2017**



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well BMC L 14D-08-07-95
<b>Company:</b>	Ursa Operating Company, LLC	<b>TVD Reference:</b>	BMC L 14D-08-07-95 @ 5447.0usft (Est KB)
<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	BMC L 14D-08-07-95 @ 5447.0usft (Est KB)
<b>Site:</b>	BMC L Pad	<b>North Reference:</b>	True
<b>Well:</b>	BMC L 14D-08-07-95	<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		Using geodetic scale factor

Site		BMC L Pad			
Site Position:		Northing:	1,600,015.26 usft	Latitude:	39.453634901
From:	Lat/Long	Easting:	2,287,409.35 usft	Longitude:	-108.023927826
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.59 °

Well	BMC L 14D-08-07-95, SHL: Lat 39.453326805 Long -108.023931294					
Well Position	+N/-S	-112.2 usft	Northing:	1,599,903.11 usft	Latitude:	39.453326805
	+E/-W	-1.0 usft	Easting:	2,287,405.25 usft	Longitude:	-108.023931294
Position Uncertainty		0.0 usft	Wellhead Elevation:	5,447.0 usft	Ground Level:	5,430.0 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>
	IGRF2015	5/11/2017	9.72	65.55	51,518

<b>Design</b>	Design #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<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	203.57

<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	
1,851.0	54.29	203.57	1,629.2	-624.6	-272.5	3.50	3.50	0.00	203.57	
3,895.9	54.29	203.57	2,822.8	-2,146.3	-936.4	0.00	0.00	0.00	0.00	
5,446.9	0.00	0.00	4,152.0	-2,770.9	-1,208.9	3.50	-3.50	0.00	180.00	BMC L 14D-08-07-95
7,996.9	0.00	0.00	6,702.0	-2,770.9	-1,208.9	0.00	0.00	0.00	0.00	

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<b>Company:</b>	Ursa Operating Company, LLC	<b>TVD Reference:</b>	BMC L 14D-08-07-95 @ 5447.0usft (Est KB)
<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	BMC L 14D-08-07-95 @ 5447.0usft (Est KB)
<b>Site:</b>	BMC L Pad	<b>North Reference:</b>	True
<b>Well:</b>	BMC L 14D-08-07-95	<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 39.453326805, -108.023931294</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	203.57	399.9	-2.8	-1.2	3.1	3.50	3.50	0.00
500.0	7.00	203.57	499.5	-11.2	-4.9	12.2	3.50	3.50	0.00
600.0	10.50	203.57	598.3	-25.1	-11.0	27.4	3.50	3.50	0.00
700.0	14.00	203.57	696.0	-44.6	-19.4	48.6	3.50	3.50	0.00
800.0	17.50	203.57	792.3	-69.4	-30.3	75.8	3.50	3.50	0.00
900.0	21.00	203.57	886.7	-99.7	-43.5	108.7	3.50	3.50	0.00
1,000.0	24.50	203.57	978.9	-135.1	-58.9	147.4	3.50	3.50	0.00
1,100.0	28.00	203.57	1,068.5	-175.6	-76.6	191.6	3.50	3.50	0.00
1,200.0	31.50	203.57	1,155.3	-221.1	-96.5	241.2	3.50	3.50	0.00
1,300.0	35.00	203.57	1,239.0	-271.4	-118.4	296.1	3.50	3.50	0.00
1,400.0	38.50	203.57	1,319.1	-326.2	-142.3	355.9	3.50	3.50	0.00
1,500.0	42.00	203.57	1,395.4	-385.4	-168.1	420.5	3.50	3.50	0.00
1,600.0	45.50	203.57	1,467.6	-448.8	-195.8	489.6	3.50	3.50	0.00
1,700.0	49.00	203.57	1,535.5	-516.1	-225.1	563.0	3.50	3.50	0.00
1,800.0	52.50	203.57	1,598.7	-587.0	-256.1	640.5	3.50	3.50	0.00
1,851.0	54.29	203.57	1,629.2	-624.6	-272.5	681.4	3.50	3.50	0.00
<b>Start 2044.9 hold at 1851.0 MD</b>									
1,900.0	54.29	203.57	1,657.8	-661.0	-288.4	721.2	0.00	0.00	0.00
1,972.4	54.29	203.57	1,700.0	-714.9	-311.9	780.0	0.00	0.00	0.00
<b>Surface Casing</b>									
2,000.0	54.29	203.57	1,716.1	-735.4	-320.8	802.4	0.00	0.00	0.00
2,100.0	54.29	203.57	1,774.5	-809.9	-353.3	883.6	0.00	0.00	0.00
2,200.0	54.29	203.57	1,832.9	-884.3	-385.8	964.8	0.00	0.00	0.00
2,300.0	54.29	203.57	1,891.3	-958.7	-418.2	1,046.0	0.00	0.00	0.00
2,400.0	54.29	203.57	1,949.6	-1,033.1	-450.7	1,127.2	0.00	0.00	0.00
2,500.0	54.29	203.57	2,008.0	-1,107.5	-483.2	1,208.3	0.00	0.00	0.00
2,600.0	54.29	203.57	2,066.4	-1,182.0	-515.6	1,289.5	0.00	0.00	0.00
2,700.0	54.29	203.57	2,124.8	-1,256.4	-548.1	1,370.7	0.00	0.00	0.00
2,800.0	54.29	203.57	2,183.1	-1,330.8	-580.6	1,451.9	0.00	0.00	0.00
2,900.0	54.29	203.57	2,241.5	-1,405.2	-613.0	1,533.1	0.00	0.00	0.00
3,000.0	54.29	203.57	2,299.9	-1,479.6	-645.5	1,614.3	0.00	0.00	0.00
3,100.0	54.29	203.57	2,358.3	-1,554.1	-678.0	1,695.5	0.00	0.00	0.00
3,200.0	54.29	203.57	2,416.6	-1,628.5	-710.4	1,776.7	0.00	0.00	0.00
3,300.0	54.29	203.57	2,475.0	-1,702.9	-742.9	1,857.9	0.00	0.00	0.00
3,400.0	54.29	203.57	2,533.4	-1,777.3	-775.4	1,939.1	0.00	0.00	0.00
3,500.0	54.29	203.57	2,591.8	-1,851.7	-807.8	2,020.3	0.00	0.00	0.00
3,600.0	54.29	203.57	2,650.1	-1,926.2	-840.3	2,101.5	0.00	0.00	0.00
3,700.0	54.29	203.57	2,708.5	-2,000.6	-872.8	2,182.7	0.00	0.00	0.00
3,800.0	54.29	203.57	2,766.9	-2,075.0	-905.2	2,263.9	0.00	0.00	0.00
3,895.9	54.29	203.57	2,822.8	-2,146.3	-936.4	2,341.7	0.00	0.00	0.00
<b>Start Drop -3.50</b>									
3,900.0	54.14	203.57	2,825.3	-2,149.4	-937.7	2,345.1	3.50	-3.50	0.00
4,000.0	50.64	203.57	2,886.3	-2,222.0	-969.4	2,424.3	3.50	-3.50	0.00
4,100.0	47.14	203.57	2,952.0	-2,291.1	-999.5	2,499.6	3.50	-3.50	0.00
4,200.0	43.64	203.57	3,022.2	-2,356.3	-1,028.0	2,570.8	3.50	-3.50	0.00
4,300.0	40.14	203.57	3,096.7	-2,417.5	-1,054.7	2,637.5	3.50	-3.50	0.00
4,400.0	36.64	203.57	3,175.0	-2,474.4	-1,079.5	2,699.6	3.50	-3.50	0.00

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<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	BMC L 14D-08-07-95 @ 5447.0usft (Est KB)
<b>Site:</b>	BMC L Pad	<b>North Reference:</b>	True
<b>Well:</b>	BMC L 14D-08-07-95	<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)
4,500.0	33.14	203.57	3,257.0	-2,526.8	-1,102.4	2,756.8	3.50	-3.50	0.00
4,600.0	29.64	203.57	3,342.4	-2,574.6	-1,123.2	2,808.9	3.50	-3.50	0.00
4,608.7	29.33	203.57	3,350.0	-2,578.5	-1,124.9	2,813.2	3.50	-3.50	0.00
<b>Williams Fork</b>									
4,700.0	26.14	203.57	3,430.8	-2,617.4	-1,141.9	2,855.7	3.50	-3.50	0.00
4,800.0	22.64	203.57	3,521.8	-2,655.3	-1,158.4	2,897.0	3.50	-3.50	0.00
4,900.0	19.14	203.57	3,615.2	-2,688.0	-1,172.7	2,932.6	3.50	-3.50	0.00
5,000.0	15.64	203.57	3,710.6	-2,715.3	-1,184.6	2,962.5	3.50	-3.50	0.00
5,100.0	12.14	203.57	3,807.7	-2,737.3	-1,194.2	2,986.5	3.50	-3.50	0.00
5,200.0	8.64	203.57	3,906.1	-2,753.9	-1,201.4	3,004.5	3.50	-3.50	0.00
5,300.0	5.14	203.57	4,005.3	-2,764.9	-1,206.2	3,016.5	3.50	-3.50	0.00
5,400.0	1.64	203.57	4,105.1	-2,770.3	-1,208.6	3,022.4	3.50	-3.50	0.00
5,446.9	0.00	0.00	4,152.0	-2,770.9	-1,208.9	3,023.1	3.50	-3.50	333.65
<b>Back to Vertical - Start 2550.0 hold at 5446.9 MD - Top of Gas - BMC L 14D-08-07-95 TGT</b>									
5,500.0	0.00	0.00	4,205.1	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
5,600.0	0.00	0.00	4,305.1	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
5,700.0	0.00	0.00	4,405.1	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
5,800.0	0.00	0.00	4,505.1	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
5,900.0	0.00	0.00	4,605.1	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
6,000.0	0.00	0.00	4,705.1	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
6,100.0	0.00	0.00	4,805.1	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
6,200.0	0.00	0.00	4,905.1	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
6,300.0	0.00	0.00	5,005.1	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
6,400.0	0.00	0.00	5,105.1	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
6,500.0	0.00	0.00	5,205.1	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
6,600.0	0.00	0.00	5,305.1	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
6,700.0	0.00	0.00	5,405.1	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
6,800.0	0.00	0.00	5,505.1	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
6,900.0	0.00	0.00	5,605.1	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
7,000.0	0.00	0.00	5,705.1	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
7,100.0	0.00	0.00	5,805.1	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
7,188.9	0.00	0.00	5,894.0	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
<b>Cameo</b>									
7,200.0	0.00	0.00	5,905.1	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
7,300.0	0.00	0.00	6,005.1	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
7,400.0	0.00	0.00	6,105.1	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
7,500.0	0.00	0.00	6,205.1	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
7,600.0	0.00	0.00	6,305.1	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
7,696.9	0.00	0.00	6,402.0	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
<b>Rollins</b>									
7,700.0	0.00	0.00	6,405.1	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
7,800.0	0.00	0.00	6,505.1	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
7,900.0	0.00	0.00	6,605.1	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
7,996.9	0.00	0.00	6,702.0	-2,770.9	-1,208.9	3,023.1	0.00	0.00	0.00
<b>BHL 39.4457196, -108.0282117 - TD at 7996.9</b>									

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<b>Project:</b>	Rockies Region	<b>MD Reference:</b>	BMC L 14D-08-07-95 @ 5447.0usft (Est KB)
<b>Site:</b>	BMC L Pad	<b>North Reference:</b>	True
<b>Well:</b>	BMC L 14D-08-07-95	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

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 L 14D-08-07-95 TC	0.00	0.00	4,152.0	-2,770.9	-1,208.9	1,597,166.98	2,286,119.96	39.445719600	-108.028211700
- plan hits target center									
- Rectangle (sides W100.0 H40.0 D2,550.0)									

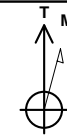
Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,608.7	3,350.0	Williams Fork		0.00		
5,446.9	4,152.0	Top of Gas		0.00		
7,188.9	5,894.0	Cameo		0.00		
7,696.9	6,402.0	Rollins		0.00		

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 39.453326805, -108.023931294
300.0	300.0	0.0	0.0	Start Build 3.50
1,851.0	1,629.2	-624.6	-272.5	Start 2044.9 hold at 1851.0 MD
1,972.4	1,700.0	-714.9	-311.9	Surface Casing
3,895.9	2,822.8	-2,146.3	-936.4	Start Drop -3.50
5,446.9	4,152.0	-2,770.9	-1,208.9	Back to Vertical
5,446.9	4,152.0	-2,770.9	-1,208.9	Start 2550.0 hold at 5446.9 MD
7,996.9	6,702.0	-2,770.9	-1,208.9	BHL 39.4457196, -108.0282117
7,996.9	6,702.0	-2,770.9	-1,208.9	TD at 7996.9



Well Name: BMC L 14D-08-07-95  
Surface Location: BMC L Pad  
North American Datum 1983, US State Plane 1983, Colorado Central Zone  
Ground Elevation: 5430.0  
+N/-S +E/-W Northing Easting Latitude Longitude  
0.0 0.0 1599903.12 2287405.25 39.453326805 -108.023931294  
Est KB BMC L 14D-08-07-95 @ 5447.0usft (Est KB)

Slot



Azimuths to True North  
Magnetic North: 9.72°  
Magnetic Field  
Strength: 51517.9snT  
Dip Angle: 65.55°  
Date: 5/11/2017  
Model: IGRF2015

BMC L Pad  
BMC L 14D-08-07-95  
Design #1  
19:41, May 15 2017

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
BMC L 14D-08-07-95 TGT	4152.0	-2770.9	-1208.9	1597166.98	2286119.95	39.445719600	-108.028211700	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	300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.0	
3	1851.0	54.29	203.57	1629.2	-624.6	-272.5	3.50	203.57	681.4	
4	3895.9	54.29	203.57	2822.8	-2146.3	-936.4	0.00	0.00	2341.7	
5	5446.9	0.00	0.00	4152.0	-2770.9	-1208.9	3.50	180.00	3023.1	BMC L 14D-08-07-95 TGT
6	7996.9	0.00	0.00	6702.0	-2770.9	-1208.9	0.00	0.00	3023.1	

#### ANNOTATIONS

TVD	MD	Annotation
0.1	0.1	SHL 39.453326805, -108.023931294
300.0	300.0	Start Build 3.50
1629.2	1851.0	Start 2044.9 hold at 1851.0 MD
1700.0	1972.4	Surface Casing
2822.8	3895.9	Start Drop -3.50
4152.0	5446.9	Back to Vertical
4152.0	5446.9	Start 2550.0 hold at 5446.9 MD
6702.0	7996.9	BHL 39.4457196, -108.0282117
6702.0	7996.9	TD at 7996.9

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
3350.0	4608.7	Williams Fork	0.00	
4152.0	5446.9	Top of Gas	0.00	
5894.0	7188.9	Cameo	0.00	
6402.0	7696.9	Rollins	0.00	

