



# **Ursa Operating Company, LLC**

**Rockies Region**

**BMC B**

**BMC B 13D-18-07-95**

**Wellbore #1**

**Design: Actual**

## **End of Well Report**

**15 June, 2017**



<b>Company:</b>	Ursa Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well BMC B 13D-18-07-95
<b>Project:</b>	Rockies Region	<b>TVD Reference:</b>	BMC B 13D-18-07-95 @ 5117.0usft (Plan KB)
<b>Site:</b>	BMC B	<b>MD Reference:</b>	BMC B 13D-18-07-95 @ 5117.0usft (Plan KB)
<b>Well:</b>	BMC B 13D-18-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual	<b>Database:</b>	EDM 5000.1 Single User Db

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:		Latitude:	
From:	Lat/Long	Easting:		Longitude:	
Position Uncertainty:	0.0 usft	Slot Radius:		Grid Convergence:	
		1,594,816.34	usft	39.438867241	
		2,280,886.96	usft	-108.046501442	
		13-3/16	"	-1.61	°

Well		BMC B 13D-18-07-95, SHL: Lat 39.438802831 Long -108.046623026				
Well Position	+N/-S	0.0 usft	Northing:	1,594,793.85 usft	Latitude:	39.438802831
	+E/-W	0.0 usft	Easting:	2,280,851.97 usft	Longitude:	-108.046623026
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	6/15/2017	9.72	65.53	51,499

Design		Actual			
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)		+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0		0.0	0.0	182.90

Survey Program		Date 6/15/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
138.0	6,320.0	Actual (Wellbore #1)	MWD	MWD - Standard

<b>Company:</b>	Ursa Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well BMC B 13D-18-07-95
<b>Project:</b>	Rockies Region	<b>TVD Reference:</b>	BMC B 13D-18-07-95 @ 5117.0usft (Plan KB)
<b>Site:</b>	BMC B	<b>MD Reference:</b>	BMC B 13D-18-07-95 @ 5117.0usft (Plan KB)
<b>Well:</b>	BMC B 13D-18-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual	<b>Database:</b>	EDM 5000.1 Single User Db

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
138.0	0.63	209.63	138.0	0.7	-0.7	-0.4	0.46	0.46	0.00	
168.0	1.89	193.69	168.0	1.3	-1.3	-0.6	4.32	4.20	-53.13	
199.0	3.21	188.19	199.0	2.7	-2.6	-0.8	4.33	4.26	-17.74	
228.0	4.40	186.91	227.9	4.6	-4.5	-1.1	4.11	4.10	-4.41	
259.0	5.54	187.53	258.8	7.3	-7.2	-1.4	3.68	3.68	2.00	
289.0	6.77	183.09	288.6	10.5	-10.4	-1.7	4.39	4.10	-14.80	
320.0	8.04	176.68	319.3	14.5	-14.4	-1.7	4.88	4.10	-20.68	
350.0	8.83	180.06	349.0	18.9	-18.8	-1.5	3.11	2.63	11.27	
380.0	9.71	182.61	378.6	23.7	-23.6	-1.7	3.24	2.93	8.50	
411.0	10.55	185.51	409.1	29.1	-29.1	-2.1	3.17	2.71	9.35	
442.0	10.72	186.96	439.6	34.8	-34.8	-2.7	1.02	0.55	4.68	
472.0	11.34	185.95	469.1	40.6	-40.5	-3.3	2.16	2.07	-3.37	
503.0	12.48	183.97	499.4	47.0	-46.8	-3.9	3.91	3.68	-6.39	
533.0	13.54	182.44	528.6	53.7	-53.6	-4.2	3.71	3.53	-5.10	
564.0	14.50	181.82	558.7	61.2	-61.1	-4.5	3.13	3.10	-2.00	
594.0	15.21	181.29	587.7	68.9	-68.8	-4.7	2.41	2.37	-1.77	
625.0	16.35	180.24	617.5	77.3	-77.2	-4.8	3.79	3.68	-3.39	
655.0	17.10	180.28	646.3	86.0	-85.8	-4.9	2.50	2.50	0.13	
686.0	18.63	180.63	675.8	95.5	-95.3	-5.0	4.95	4.94	1.13	
716.0	19.86	180.59	704.1	105.3	-105.2	-5.1	4.10	4.10	-0.13	
747.0	21.01	180.46	733.1	116.2	-116.0	-5.2	3.71	3.71	-0.42	
789.0	22.46	179.45	772.1	131.7	-131.6	-5.1	3.57	3.45	-2.40	
831.0	24.13	179.45	810.7	148.3	-148.2	-5.0	3.98	3.98	0.00	
873.0	25.84	179.36	848.8	166.0	-165.9	-4.8	4.07	4.07	-0.21	
916.0	26.78	179.06	887.3	185.0	-185.0	-4.5	2.21	2.19	-0.70	
958.0	27.16	178.74	924.8	204.0	-204.0	-4.2	0.97	0.90	-0.76	

<b>Company:</b>	Ursa Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well BMC B 13D-18-07-95
<b>Project:</b>	Rockies Region	<b>TVD Reference:</b>	BMC B 13D-18-07-95 @ 5117.0usft (Plan KB)
<b>Site:</b>	BMC B	<b>MD Reference:</b>	BMC B 13D-18-07-95 @ 5117.0usft (Plan KB)
<b>Well:</b>	BMC B 13D-18-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual	<b>Database:</b>	EDM 5000.1 Single User Db

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	
1,000.0	27.91	179.36	962.0	223.4	-223.5	-3.8	1.91	1.79	1.48	
1,042.0	27.95	179.10	999.1	243.0	-243.1	-3.6	0.31	0.10	-0.62	
1,084.0	28.21	177.95	1,036.2	262.7	-262.9	-3.1	1.43	0.62	-2.74	
1,126.0	27.72	178.04	1,073.3	282.3	-282.6	-2.4	1.17	-1.17	0.21	
1,169.0	26.85	180.06	1,111.5	302.0	-302.3	-2.1	2.95	-2.02	4.70	
1,211.0	26.37	181.78	1,149.0	320.8	-321.1	-2.4	2.16	-1.14	4.10	
1,253.0	26.28	183.97	1,186.7	339.4	-339.7	-3.3	2.32	-0.21	5.21	
1,295.0	26.08	183.49	1,224.4	357.9	-358.2	-4.5	0.69	-0.48	-1.14	
1,337.0	26.81	183.36	1,262.0	376.7	-376.8	-5.6	1.74	1.74	-0.31	
1,379.0	27.38	181.86	1,299.4	395.8	-396.0	-6.5	2.12	1.36	-3.57	
1,421.0	27.73	182.44	1,336.6	415.2	-415.4	-7.2	1.05	0.83	1.38	
1,463.0	28.04	182.13	1,373.7	434.8	-435.0	-8.0	0.81	0.74	-0.74	
1,506.0	28.35	181.73	1,411.6	455.2	-455.3	-8.7	0.84	0.72	-0.93	
1,548.0	28.58	181.14	1,448.5	475.2	-475.3	-9.2	0.86	0.55	-1.40	
1,590.0	28.74	180.72	1,485.4	495.3	-495.5	-9.5	0.61	0.38	-1.00	
1,632.0	28.96	181.07	1,522.2	515.6	-515.7	-9.8	0.66	0.52	0.83	
1,674.0	28.52	181.95	1,559.0	535.7	-535.9	-10.3	1.45	-1.05	2.10	
1,716.0	28.13	182.52	1,596.0	555.7	-555.8	-11.1	1.13	-0.93	1.36	
1,758.0	28.30	181.91	1,633.0	575.5	-575.7	-11.9	0.80	0.40	-1.45	
1,800.0	28.13	179.40	1,670.0	595.4	-595.5	-12.1	2.85	-0.40	-5.98	
Last PZD Surface Survey										
1,880.0	28.48	177.90	1,740.4	633.2	-633.4	-11.2	0.99	0.44	-1.87	
1,965.0	28.92	180.36	1,815.0	673.9	-674.2	-10.6	1.48	0.52	2.89	
2,049.0	27.91	181.72	1,888.9	713.9	-714.2	-11.3	1.43	-1.20	1.62	
2,133.0	29.00	183.08	1,962.7	753.9	-754.2	-13.0	1.51	1.30	1.62	
2,218.0	27.91	183.17	2,037.5	794.4	-794.6	-15.2	1.28	-1.28	0.11	
2,302.0	29.22	181.85	2,111.2	834.5	-834.8	-17.0	1.73	1.56	-1.57	

<b>Company:</b>	Ursa Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well BMC B 13D-18-07-95
<b>Project:</b>	Rockies Region	<b>TVD Reference:</b>	BMC B 13D-18-07-95 @ 5117.0usft (Plan KB)
<b>Site:</b>	BMC B	<b>MD Reference:</b>	BMC B 13D-18-07-95 @ 5117.0usft (Plan KB)
<b>Well:</b>	BMC B 13D-18-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual	<b>Database:</b>	EDM 5000.1 Single User Db

Survey									
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)
2,386.0	29.93	182.51	2,184.3	876.0	-876.2	-18.5	0.93	0.85	0.79
2,471.0	29.05	181.68	2,258.3	917.8	-918.0	-20.1	1.14	-1.04	-0.98
2,555.0	29.40	182.82	2,331.6	958.8	-959.0	-21.7	0.78	0.42	1.36
2,639.0	28.74	183.79	2,405.0	999.7	-999.7	-24.0	0.97	-0.79	1.15
2,723.0	29.66	183.26	2,478.3	1,040.6	-1,040.6	-26.6	1.14	1.10	-0.63
2,808.0	29.00	181.41	2,552.4	1,082.3	-1,082.2	-28.3	1.32	-0.78	-2.18
2,892.0	28.08	180.76	2,626.2	1,122.4	-1,122.3	-29.0	1.16	-1.10	-0.77
2,978.0	29.22	182.64	2,701.7	1,163.6	-1,163.5	-30.3	1.69	1.33	2.19
3,064.0	27.95	180.62	2,777.2	1,204.7	-1,204.7	-31.4	1.86	-1.48	-2.35
3,148.0	26.89	180.54	2,851.8	1,243.4	-1,243.4	-31.8	1.26	-1.26	-0.10
3,233.0	25.50	181.44	2,928.0	1,280.9	-1,280.9	-32.5	1.70	-1.64	1.06
3,317.0	23.42	184.80	3,004.5	1,315.6	-1,315.6	-34.3	2.98	-2.48	4.00
3,402.0	19.69	184.05	3,083.6	1,346.8	-1,346.7	-36.8	4.40	-4.39	-0.88
3,486.0	16.26	181.72	3,163.4	1,372.8	-1,372.6	-38.1	4.17	-4.08	-2.77
3,570.0	13.49	185.19	3,244.6	1,394.3	-1,394.1	-39.3	3.46	-3.30	4.13
3,655.0	13.05	182.16	3,327.3	1,413.8	-1,413.6	-40.6	0.97	-0.52	-3.56
3,739.0	11.96	183.53	3,409.4	1,432.0	-1,431.7	-41.5	1.34	-1.30	1.63
3,823.0	11.34	181.50	3,491.6	1,449.0	-1,448.7	-42.3	0.88	-0.74	-2.42
3,907.0	8.22	184.27	3,574.4	1,463.2	-1,462.9	-42.9	3.76	-3.71	3.30
3,992.0	7.73	182.60	3,658.6	1,475.0	-1,474.7	-43.6	0.64	-0.58	-1.96
4,078.0	7.43	184.09	3,743.8	1,486.4	-1,486.0	-44.3	0.42	-0.35	1.73
4,105.0	6.74	184.04	3,770.6	1,489.7	-1,489.3	-44.5	2.55	-2.55	-0.18
<b>13D-18-07-95 TGT</b>									
4,166.0	5.19	183.88	3,831.3	1,496.0	-1,495.7	-45.0	2.55	-2.55	-0.26
4,254.0	2.90	196.22	3,919.1	1,502.2	-1,501.8	-45.9	2.77	-2.60	14.02
4,342.0	0.88	184.27	4,007.0	1,505.0	-1,504.6	-46.5	2.33	-2.30	-13.58
4,429.0	1.05	21.06	4,094.0	1,504.9	-1,504.5	-46.3	2.19	0.20	-187.60

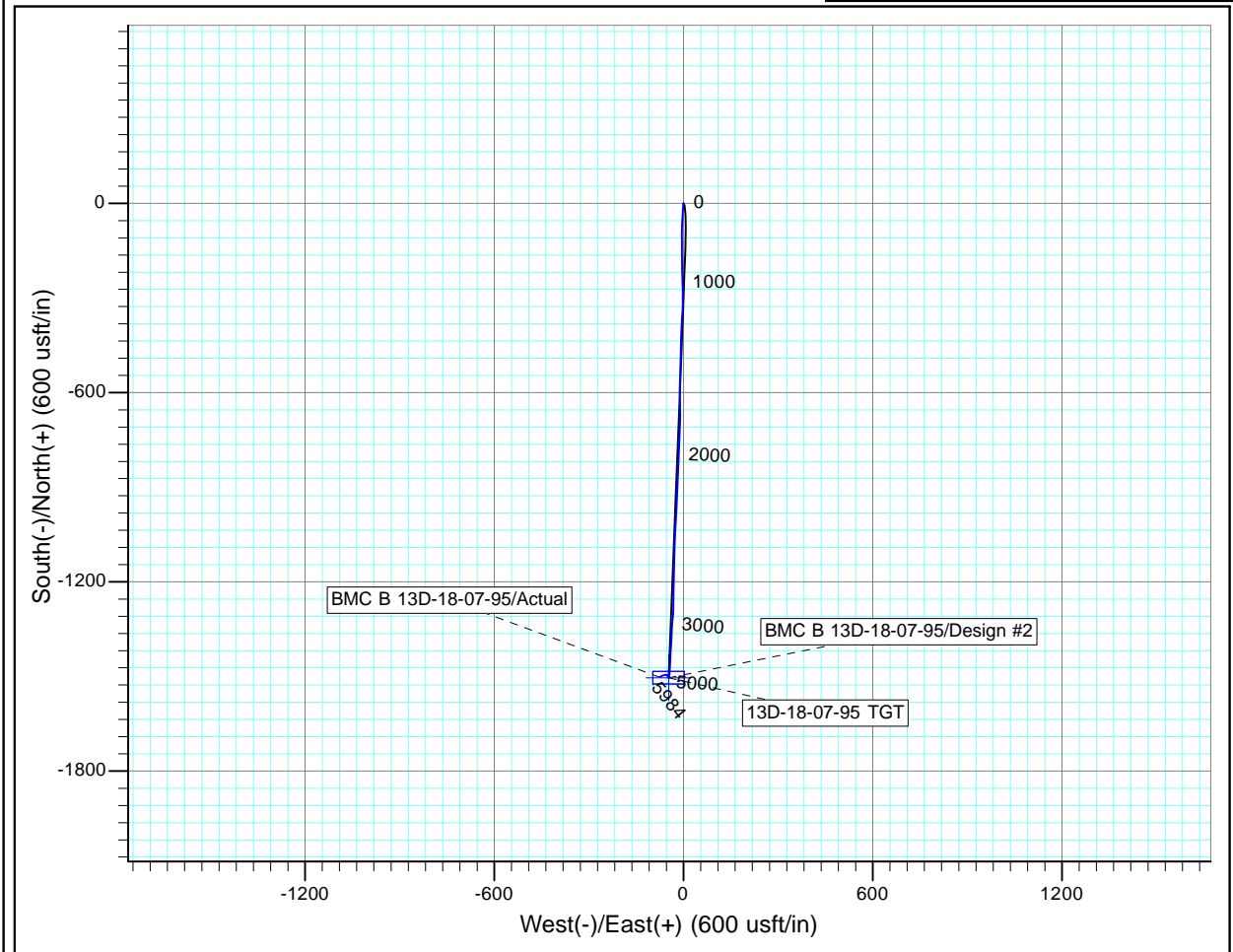
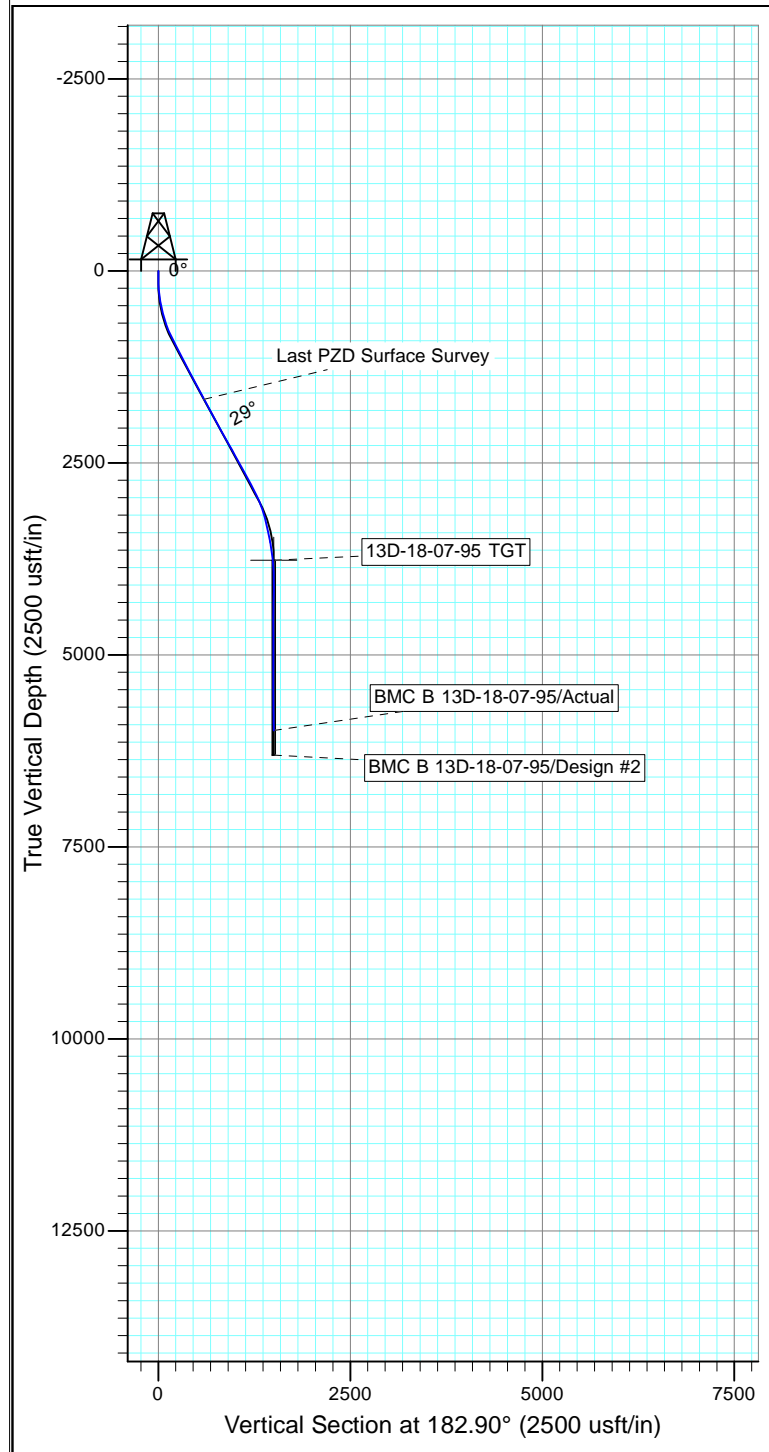
<b>Company:</b>	Ursa Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well BMC B 13D-18-07-95
<b>Project:</b>	Rockies Region	<b>TVD Reference:</b>	BMC B 13D-18-07-95 @ 5117.0usft (Plan KB)
<b>Site:</b>	BMC B	<b>MD Reference:</b>	BMC B 13D-18-07-95 @ 5117.0usft (Plan KB)
<b>Well:</b>	BMC B 13D-18-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual	<b>Database:</b>	EDM 5000.1 Single User Db

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	
4,513.0	1.49	0.76	4,178.0	1,503.1	-1,502.7	-46.0	0.74	0.52	-24.17	
4,598.0	1.32	359.13	4,263.0	1,501.0	-1,500.6	-46.0	0.21	-0.20	-1.92	
4,682.0	1.00	344.60	4,346.9	1,499.4	-1,498.9	-46.2	0.51	-0.38	-17.30	
4,767.0	1.19	319.27	4,431.9	1,498.0	-1,497.6	-47.0	0.61	0.22	-29.80	
4,851.0	0.83	274.45	4,515.9	1,497.4	-1,496.9	-48.2	1.00	-0.43	-53.36	
4,939.0	1.80	272.51	4,603.9	1,497.4	-1,496.7	-50.2	1.10	1.10	-2.20	
5,025.0	0.13	153.11	4,689.9	1,497.5	-1,496.8	-51.5	2.17	-1.94	-138.84	
5,109.0	0.13	231.38	4,773.9	1,497.6	-1,496.9	-51.5	0.20	0.00	93.18	
5,194.0	0.97	228.30	4,858.9	1,498.2	-1,497.5	-52.1	0.99	0.99	-3.62	
5,279.0	0.35	9.19	4,943.9	1,498.4	-1,497.7	-52.6	1.48	-0.73	165.75	
5,364.0	0.44	2.12	5,028.9	1,497.8	-1,497.1	-52.6	0.12	0.11	-8.32	
5,449.0	0.62	338.30	5,113.9	1,497.1	-1,496.3	-52.7	0.33	0.21	-28.02	
5,535.0	1.01	303.23	5,199.9	1,496.3	-1,495.5	-53.5	0.72	0.45	-40.78	
5,622.0	1.27	281.70	5,286.8	1,495.8	-1,494.9	-55.1	0.57	0.30	-24.75	
5,706.0	1.54	257.75	5,370.8	1,495.9	-1,494.9	-57.1	0.76	0.32	-28.51	
5,792.0	2.02	255.55	5,456.8	1,496.7	-1,495.5	-59.7	0.56	0.56	-2.56	
5,881.0	2.02	255.68	5,545.7	1,497.6	-1,496.3	-62.8	0.01	0.00	0.15	
5,967.0	2.29	247.38	5,631.7	1,498.8	-1,497.4	-65.8	0.48	0.31	-9.65	
6,051.0	1.93	253.66	5,715.6	1,500.0	-1,498.4	-68.7	0.51	-0.43	7.48	
6,136.0	1.79	245.97	5,800.6	1,501.0	-1,499.4	-71.3	0.34	-0.16	-9.05	
6,220.0	1.80	239.55	5,884.5	1,502.4	-1,500.6	-73.6	0.24	0.01	-7.64	
6,260.0	1.71	230.98	5,924.5	1,503.1	-1,501.2	-74.7	0.69	-0.22	-21.42	
<b>Last PZD Survey</b>										
6,320.0	1.71	230.98	5,984.5	1,504.3	-1,502.4	-76.0	0.00	0.00	0.00	
<b>Straightline Projection to TD</b>										

<b>Company:</b>	Ursa Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well BMC B 13D-18-07-95
<b>Project:</b>	Rockies Region	<b>TVD Reference:</b>	BMC B 13D-18-07-95 @ 5117.0usft (Plan KB)
<b>Site:</b>	BMC B	<b>MD Reference:</b>	BMC B 13D-18-07-95 @ 5117.0usft (Plan KB)
<b>Well:</b>	BMC B 13D-18-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual	<b>Database:</b>	EDM 5000.1 Single User Db

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
1,800.0	1,670.0	-595.5	-12.1	Last PZD Surface Survey	
6,260.0	5,924.5	-1,501.2	-74.7	Last PZD Survey	
6,320.0	5,984.5	-1,502.4	-76.0	Straightline Projection to TD	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_



Design: Actual (BMC B 13D-18-07-95/Wellbore #1)

Created By: Derek Stephens Date: 14:21, June 15 2017

THIS SURVEY IS CORRECT TO THE BEST OF  
 MY KNOWLEDGE AND IS SUPPORTED  
 BY ACTUAL FIELD DATA