



# **Ursa Operating Company, LLC**

**Rockies Region**

**BMC B**

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

**Wellbore #1**

**Design: Actual**

## **End of Well Report**

**10 July, 2017**



<b>Company:</b>	Ursa Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well BMC B 13B-18-07-95
<b>Project:</b>	Rockies Region	<b>TVD Reference:</b>	BMC B 13B-18-07-95 @ 5117.0usft (Plan KB)
<b>Site:</b>	BMC B	<b>MD Reference:</b>	BMC B 13B-18-07-95 @ 5117.0usft (Plan KB)
<b>Well:</b>	BMC B 13B-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

<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

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

Well		BMC B 13B-18-07-95, SHL: Lat 39.438807445 Long -108.046410772				
Well Position	+N/-S	0.0 usft	Northing:	1,594,793.85 usft	Latitude:	39.438807445
	+E/-W	0.0 usft	Easting:	2,280,911.94 usft	Longitude:	-108.046410772
Position Uncertainty		0.0 usft	Wellhead Elevation:	5,117.0 usft	Ground Level:	5,100.0 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	7/10/2017	9.71	65.53	51,492

<b>Design</b>	Actual			
<b>Audit Notes:</b>				
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<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	187.23

<b>Survey Program</b>	<b>Date</b>	7/10/2017		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
138.0	6,115.0	Actual (Wellbore #1)	MWD	MWD - Standard

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<b>Well:</b>	BMC B 13B-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	0.31	60.49	138.0	-0.2	0.2	0.3	0.22	0.22	0.00	
169.0	0.31	92.61	169.0	-0.3	0.2	0.5	0.55	0.00	103.61	
200.0	0.40	60.39	200.0	-0.4	0.3	0.7	0.69	0.29	-103.94	
230.0	0.55	105.18	230.0	-0.4	0.3	0.9	1.29	0.50	149.30	
259.0	1.05	129.74	259.0	-0.2	0.1	1.2	2.05	1.72	84.69	
290.0	1.54	134.01	290.0	0.2	-0.4	1.7	1.61	1.58	13.77	
319.0	1.93	133.52	319.0	0.7	-1.0	2.4	1.35	1.34	-1.69	
349.0	2.90	132.73	348.9	1.4	-1.9	3.3	3.24	3.23	-2.63	
379.0	4.17	135.02	378.9	2.5	-3.1	4.6	4.26	4.23	7.63	
410.0	5.05	135.77	409.8	4.1	-4.9	6.4	2.85	2.84	2.42	
439.0	5.84	136.86	438.7	5.8	-6.9	8.3	2.75	2.72	3.76	
469.0	6.26	147.71	468.5	8.1	-9.4	10.2	4.05	1.40	36.17	
499.0	6.59	159.36	498.3	10.8	-12.4	11.7	4.47	1.10	38.83	
528.0	6.94	167.41	527.1	14.0	-15.7	12.6	3.48	1.21	27.76	
559.0	7.51	178.88	557.9	17.7	-19.5	13.1	4.99	1.84	37.00	
589.0	8.53	188.59	587.6	21.9	-23.7	12.8	5.64	3.40	32.37	
620.0	9.76	194.65	618.2	26.8	-28.5	11.8	5.03	3.97	19.55	
650.0	11.07	195.53	647.7	32.2	-33.7	10.4	4.40	4.37	2.93	
681.0	12.54	195.63	678.0	38.4	-39.8	8.7	4.74	4.74	0.32	
711.0	13.93	195.18	707.2	45.2	-46.5	6.9	4.65	4.63	-1.50	
741.0	14.72	193.38	736.3	52.6	-53.7	5.0	3.02	2.63	-6.00	
771.0	15.73	192.81	765.2	60.4	-61.3	3.2	3.40	3.37	-1.90	
801.0	16.08	189.99	794.1	68.6	-69.4	1.6	2.83	1.17	-9.40	
831.0	16.74	190.13	822.9	77.1	-77.7	0.1	2.20	2.20	0.47	
873.0	16.96	184.24	863.1	89.3	-89.8	-1.4	4.10	0.52	-14.02	
915.0	15.94	180.24	903.3	101.1	-101.7	-1.9	3.63	-2.43	-9.52	

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<b>Well:</b>	BMC B 13B-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)
958.0	15.69	178.96	944.7	112.7	-113.4	-1.8	1.00	-0.58	-2.98
1,000.0	15.07	183.31	985.2	123.8	-124.5	-2.0	3.12	-1.48	10.36
1,042.0	14.85	184.98	1,025.8	134.6	-135.3	-2.8	1.15	-0.52	3.98
1,084.0	14.24	187.09	1,066.4	145.2	-145.8	-3.9	1.92	-1.45	5.02
1,126.0	13.97	186.74	1,107.2	155.4	-156.0	-5.1	0.67	-0.64	-0.83
1,168.0	14.02	187.62	1,147.9	165.5	-166.1	-6.4	0.52	0.12	2.10
1,210.0	14.28	190.21	1,188.7	175.8	-176.2	-8.0	1.63	0.62	6.17
1,253.0	14.50	191.05	1,230.3	186.5	-186.7	-9.9	0.71	0.51	1.95
1,295.0	14.94	190.65	1,270.9	197.1	-197.2	-12.0	1.08	1.05	-0.95
1,338.0	15.82	189.29	1,312.4	208.5	-208.4	-13.9	2.21	2.05	-3.16
1,380.0	15.82	189.29	1,352.8	220.0	-219.7	-15.8	0.00	0.00	0.00
1,422.0	16.17	190.52	1,393.2	231.5	-231.1	-17.8	1.16	0.83	2.93
1,464.0	16.44	189.55	1,433.5	243.3	-242.7	-19.8	0.91	0.64	-2.31
1,506.0	16.79	188.02	1,473.7	255.3	-254.6	-21.6	1.33	0.83	-3.64
1,548.0	17.09	187.66	1,513.9	267.5	-266.7	-23.3	0.76	0.71	-0.86
1,590.0	17.40	187.05	1,554.0	280.0	-279.1	-24.9	0.85	0.74	-1.45
1,632.0	17.45	186.13	1,594.1	292.6	-291.6	-26.4	0.67	0.12	-2.19
1,675.0	17.31	183.05	1,635.1	305.4	-304.4	-27.4	2.16	-0.33	-7.16
1,717.0	17.49	181.73	1,675.2	317.9	-316.9	-27.9	1.03	0.43	-3.14
Last PZD Surface Survey									
1,789.0	17.31	184.63	1,743.9	339.4	-338.4	-29.1	1.23	-0.25	4.03
1,874.0	17.09	191.75	1,825.1	364.5	-363.2	-32.7	2.49	-0.26	8.38
1,960.0	16.65	189.98	1,907.4	389.4	-387.7	-37.4	0.79	-0.51	-2.06
2,044.0	16.04	189.16	1,988.0	413.0	-411.1	-41.3	0.78	-0.73	-0.98
2,133.0	16.61	194.26	2,073.4	437.9	-435.5	-46.4	1.73	0.64	5.73
2,219.0	16.00	193.25	2,156.0	461.9	-459.0	-52.1	0.78	-0.71	-1.17
2,304.0	15.47	191.93	2,237.8	484.8	-481.5	-57.2	0.75	-0.62	-1.55

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Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	
2,388.0	14.73	189.95	2,318.9	506.7	-502.9	-61.3	1.07	-0.88	-2.36	
2,473.0	15.42	189.33	2,401.0	528.8	-524.7	-65.0	0.83	0.81	-0.73	
2,559.0	15.68	190.17	2,483.8	551.8	-547.5	-68.9	0.40	0.30	0.98	
2,643.0	14.81	189.03	2,564.9	573.9	-569.2	-72.6	1.10	-1.04	-1.36	
2,727.0	16.22	188.10	2,645.8	596.3	-591.5	-76.0	1.70	1.68	-1.11	
2,812.0	15.73	187.40	2,727.5	619.7	-614.6	-79.1	0.62	-0.58	-0.82	
2,896.0	16.48	188.02	2,808.2	643.0	-637.7	-82.2	0.92	0.89	0.74	
2,982.0	15.78	189.25	2,890.8	666.9	-661.3	-85.8	0.91	-0.81	1.43	
3,066.0	16.17	187.88	2,971.6	690.0	-684.2	-89.3	0.65	0.46	-1.63	
3,151.0	15.47	188.06	3,053.4	713.2	-707.2	-92.5	0.83	-0.82	0.21	
3,238.0	15.01	187.54	3,137.3	736.0	-729.8	-95.6	0.55	-0.53	-0.60	
3,322.0	13.75	186.04	3,218.7	756.9	-750.5	-98.1	1.56	-1.50	-1.79	
3,406.0	12.92	185.34	3,300.4	776.3	-769.8	-100.0	1.01	-0.99	-0.83	
3,491.0	11.83	184.89	3,383.4	794.5	-787.9	-101.6	1.29	-1.28	-0.53	
3,575.0	10.90	185.51	3,465.8	811.0	-804.4	-103.1	1.12	-1.11	0.74	
3,659.0	8.39	188.50	3,548.6	825.1	-818.4	-104.8	3.05	-2.99	3.56	
3,742.0	6.20	182.57	3,630.9	835.6	-828.9	-105.9	2.79	-2.64	-7.14	
3,828.0	2.81	159.58	3,716.7	842.1	-835.5	-105.3	4.39	-3.94	-26.73	
3,891.5	0.92	135.82	3,780.1	843.8	-837.3	-104.4	3.16	-2.98	-37.45	
13B-18-07-95 TGT										
3,912.0	0.53	92.08	3,800.6	843.9	-837.4	-104.2	3.16	-1.89	-212.94	
3,996.0	0.66	33.46	3,884.6	843.4	-837.0	-103.6	0.71	0.15	-69.79	
4,081.0	0.62	82.33	3,969.6	842.9	-836.6	-102.9	0.62	-0.05	57.49	
4,167.0	0.35	117.40	4,055.6	842.8	-836.6	-102.2	0.45	-0.31	40.78	
4,255.0	0.18	221.50	4,143.6	843.0	-836.9	-102.0	0.49	-0.19	118.30	
4,341.0	0.79	195.49	4,229.6	843.7	-837.5	-102.3	0.74	0.71	-30.24	
4,426.0	1.41	49.46	4,314.6	843.5	-837.4	-101.6	2.48	0.73	-171.80	

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Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	
4,510.0	0.79	75.56	4,398.6	842.6	-836.6	-100.3	0.93	-0.74	31.07	
4,594.0	0.70	58.69	4,482.6	842.0	-836.2	-99.3	0.28	-0.11	-20.08	
4,678.0	0.22	49.54	4,566.6	841.6	-835.8	-98.7	0.58	-0.57	-10.89	
4,763.0	0.45	237.27	4,651.6	841.7	-835.9	-98.9	0.79	0.27	-202.67	
4,847.0	0.92	231.57	4,735.6	842.4	-836.5	-99.7	0.56	0.56	-6.79	
4,933.0	1.58	232.84	4,821.5	843.7	-837.6	-101.2	0.77	0.77	1.48	
5,017.0	2.02	240.35	4,905.5	845.4	-839.1	-103.4	0.59	0.52	8.94	
5,102.0	1.14	232.93	4,990.5	846.9	-840.3	-105.4	1.06	-1.04	-8.73	
5,186.0	0.79	64.09	5,074.5	847.2	-840.6	-105.5	2.29	-0.42	-201.00	
5,271.0	0.62	54.38	5,159.5	846.5	-840.0	-104.6	0.24	-0.20	-11.42	
5,357.0	0.18	54.47	5,245.5	846.1	-839.7	-104.1	0.51	-0.51	0.10	
5,442.0	0.79	220.32	5,330.5	846.5	-840.1	-104.4	1.14	0.72	195.12	
5,528.0	0.88	104.48	5,416.4	847.1	-840.7	-104.1	1.65	0.10	-134.70	
5,614.0	0.48	108.08	5,502.4	847.2	-841.0	-103.1	0.47	-0.47	4.19	
5,703.0	0.70	225.24	5,591.4	847.7	-841.5	-103.2	1.14	0.25	131.64	
5,787.0	0.62	218.95	5,675.4	848.5	-842.2	-103.8	0.13	-0.10	-7.49	
5,873.0	0.75	223.22	5,761.4	849.4	-842.9	-104.5	0.16	0.15	4.97	
5,960.0	1.41	209.94	5,848.4	850.8	-844.3	-105.4	0.81	0.76	-15.26	
6,055.0	1.36	215.61	5,943.4	852.9	-846.2	-106.7	0.15	-0.05	5.97	
Last PZD Survey										
6,115.0	1.36	215.61	6,003.4	854.2	-847.4	-107.5	0.00	0.00	0.00	
Straightline Projection to TD										

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<b>Well:</b>	BMC B 13B-18-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
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Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,717.0	1,675.2	-316.9	-27.9	Last PZD Surface Survey
6,055.0	5,943.4	-846.2	-106.7	Last PZD Survey
6,115.0	6,003.4	-847.4	-107.5	Straightline Projection to TD

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

