



Ursa Operating Company, LLC

Rockies Region

BMC B

BMC B 13A-18-07-95

Wellbore #1

Design: Actual

End of Well Report

14 July, 2017



Company:	Ursa Operating Company, LLC	Local Co-ordinate Reference:	Well BMC B 13A-18-07-95
Project:	Rockies Region	TVD Reference:	BMC B 13A-18-07-95 @ 5117.0usft (Plan KB)
Site:	BMC B	MD Reference:	BMC B 13A-18-07-95 @ 5117.0usft (Plan KB)
Well:	BMC B 13A-18-07-95	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	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:	1,594,816.34 usft
From:	Lat/Long	Easting:	2,280,886.96 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	39.438867241
		Longitude:	-108.046501442
		Grid Convergence:	-1.61 °

Well	BMC B 13A-18-07-95, SHL: Lat 39.438808982 Long -108.046340020		
Well Position	+N/-S	0.0 usft	Northing: 1,594,793.85 usft
	+E/-W	0.0 usft	Easting: 2,280,931.93 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	5,117.0 usft
		Latitude:	39.438808982
		Longitude:	-108.046340020
		Ground Level:	5,100.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	7/13/2017	9.71	65.53	51,491

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	192.69

Survey Program	Date	7/14/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
108.0	6,060.0	Surface (Wellbore #1)	MWD	MWD - Standard

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Design:	Actual	Database:	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	
108.0	0.13	234.82	108.0	0.1	-0.1	-0.1	0.12	0.12	0.00	
138.0	0.22	230.86	138.0	0.2	-0.1	-0.2	0.30	0.30	-13.20	
169.0	0.31	235.13	169.0	0.3	-0.2	-0.3	0.30	0.29	13.77	
199.0	0.42	255.76	199.0	0.4	-0.3	-0.5	0.57	0.37	68.77	
229.0	0.44	249.41	229.0	0.5	-0.4	-0.7	0.17	0.07	-21.17	
259.0	0.26	266.94	259.0	0.6	-0.4	-0.9	0.69	-0.60	58.43	
289.0	0.13	257.45	289.0	0.6	-0.4	-1.0	0.45	-0.43	-31.63	
319.0	0.00	97.01	319.0	0.6	-0.4	-1.0	0.43	-0.43	0.00	
349.0	0.09	52.53	349.0	0.6	-0.4	-1.0	0.30	0.30	0.00	
379.0	0.26	150.84	379.0	0.6	-0.4	-0.9	0.96	0.57	327.70	
409.0	0.83	163.45	409.0	0.9	-0.7	-0.8	1.93	1.90	42.03	
439.0	1.76	183.84	439.0	1.5	-1.4	-0.8	3.41	3.10	67.97	
469.0	2.59	189.38	469.0	2.7	-2.5	-0.9	2.85	2.77	18.47	
498.0	3.69	196.19	497.9	4.2	-4.1	-1.3	4.00	3.79	23.48	
528.0	4.79	195.10	527.8	6.5	-6.2	-1.9	3.68	3.67	-3.63	
558.0	5.80	196.41	557.7	9.2	-8.9	-2.6	3.39	3.37	4.37	
589.0	7.16	200.10	588.5	12.7	-12.2	-3.8	4.59	4.39	11.90	
619.0	8.17	198.78	618.2	16.7	-15.9	-5.1	3.42	3.37	-4.40	
650.0	8.92	198.61	648.9	21.3	-20.3	-6.6	2.42	2.42	-0.55	
680.0	9.84	199.11	678.5	26.1	-24.9	-8.1	3.08	3.07	1.67	
710.0	10.28	198.61	708.0	31.3	-29.9	-9.8	1.50	1.47	-1.67	
740.0	11.07	199.31	737.5	36.8	-35.1	-11.6	2.67	2.63	2.33	
770.0	11.48	199.42	766.9	42.7	-40.7	-13.6	1.37	1.37	0.37	
800.0	11.73	199.93	796.3	48.7	-46.4	-15.6	0.90	0.83	1.70	
831.0	12.13	199.09	826.7	55.0	-52.4	-17.8	1.41	1.29	-2.71	
873.0	11.91	188.94	867.7	63.7	-60.9	-19.9	5.05	-0.52	-24.17	

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Site:	BMC B	MD Reference:	BMC B 13A-18-07-95 @ 5117.0usft (Plan KB)
Well:	BMC B 13A-18-07-95	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	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)	
915.0	12.27	186.18	908.8	72.5	-69.6	-21.0	1.62	0.86	-6.57	
957.0	10.94	189.11	949.9	80.9	-77.9	-22.1	3.46	-3.17	6.98	
999.0	10.90	187.35	991.2	88.8	-85.8	-23.3	0.80	-0.10	-4.19	
1,041.0	9.80	184.81	1,032.5	96.3	-93.3	-24.1	2.83	-2.62	-6.05	
1,084.0	9.76	183.53	1,074.9	103.6	-100.6	-24.6	0.51	-0.09	-2.98	
1,126.0	8.75	189.42	1,116.3	110.3	-107.3	-25.4	3.29	-2.40	14.02	
1,168.0	8.66	192.23	1,157.8	116.6	-113.6	-26.6	1.03	-0.21	6.69	
1,210.0	8.75	191.31	1,199.4	123.0	-119.8	-27.8	0.39	0.21	-2.19	
1,253.0	8.95	192.11	1,241.9	129.6	-126.3	-29.2	0.55	0.47	1.86	
1,295.0	9.01	197.02	1,283.3	136.1	-132.6	-30.8	1.83	0.14	11.69	
1,337.0	8.96	196.67	1,324.8	142.7	-138.9	-32.7	0.18	-0.12	-0.83	
1,379.0	9.27	197.11	1,366.3	149.3	-145.2	-34.7	0.76	0.74	1.05	
1,422.0	9.67	198.56	1,408.7	156.4	-152.0	-36.8	1.08	0.93	3.37	
1,464.0	10.11	197.46	1,450.1	163.5	-158.8	-39.1	1.14	1.05	-2.62	
1,506.0	10.18	192.87	1,491.4	170.9	-166.0	-41.0	1.93	0.17	-10.93	
1,548.0	10.37	192.23	1,532.8	178.4	-173.3	-42.6	0.53	0.45	-1.52	
1,590.0	9.27	191.36	1,574.1	185.6	-180.3	-44.1	2.64	-2.62	-2.07	
1,632.0	9.10	189.20	1,615.6	192.3	-186.9	-45.3	0.92	-0.40	-5.14	
1,670.0	8.88	187.71	1,653.1	198.2	-192.8	-46.2	0.84	-0.58	-3.92	
Last PZD Surface Survey										
1,744.0	9.01	183.09	1,726.2	209.6	-204.2	-47.2	0.99	0.18	-6.24	
1,828.0	8.48	194.08	1,809.3	222.3	-216.8	-49.1	2.08	-0.63	13.08	
1,914.0	9.62	199.57	1,894.2	235.7	-229.7	-53.1	1.66	1.33	6.38	
2,003.0	11.12	202.47	1,981.7	251.6	-244.6	-58.8	1.78	1.69	3.26	
2,089.0	10.94	196.85	2,066.2	267.9	-260.1	-64.4	1.27	-0.21	-6.53	
2,175.0	11.07	197.33	2,150.6	284.3	-275.8	-69.2	0.18	0.15	0.56	
2,259.0	10.90	193.03	2,233.0	300.2	-291.2	-73.4	1.00	-0.20	-5.12	

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
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Survey									
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2,344.0	10.68	193.37	2,316.5	316.2	-306.7	-77.0	0.27	-0.26	0.40
2,430.0	10.37	191.40	2,401.1	331.9	-322.1	-80.4	0.55	-0.36	-2.29
2,514.0	9.88	188.55	2,483.8	346.6	-336.6	-83.0	0.83	-0.58	-3.39
2,603.0	9.53	194.60	2,571.5	361.6	-351.3	-85.9	1.21	-0.39	6.80
2,773.0	9.40	196.50	2,739.2	389.5	-378.2	-93.4	0.20	-0.08	1.12
2,857.0	9.14	195.88	2,822.1	403.0	-391.2	-97.2	0.33	-0.31	-0.74
2,939.0	9.60	199.54	2,903.0	416.3	-403.9	-101.3	0.92	0.56	4.46
3,028.0	9.10	198.04	2,990.8	430.7	-417.6	-105.9	0.62	-0.56	-1.69
3,114.0	10.06	199.57	3,075.6	444.9	-431.2	-110.6	1.15	1.12	1.78
3,198.0	9.40	199.22	3,158.4	459.0	-444.5	-115.3	0.79	-0.79	-0.42
3,283.0	8.79	200.32	3,242.3	472.3	-457.2	-119.8	0.75	-0.72	1.29
3,367.0	9.54	197.46	3,325.3	485.6	-469.9	-124.1	1.04	0.89	-3.40
3,451.0	8.88	196.23	3,408.2	499.1	-482.7	-128.0	0.82	-0.79	-1.46
3,536.0	7.12	190.60	3,492.4	510.9	-494.2	-130.8	2.26	-2.07	-6.62
3,620.0	4.92	181.91	3,575.9	519.6	-502.9	-131.9	2.83	-2.62	-10.35
3,704.0	2.11	184.19	3,659.7	524.7	-508.1	-132.2	3.35	-3.35	2.71
3,788.0	0.88	74.02	3,743.7	525.9	-509.4	-131.6	3.04	-1.46	-131.15
3,831.2	0.90	73.82	3,786.9	525.6	-509.2	-131.0	0.05	0.05	-0.46
13A-18-07-95 TGT									
3,875.0	0.92	73.63	3,830.7	525.2	-509.0	-130.3	0.05	0.05	-0.44
3,959.0	1.14	92.08	3,914.7	524.8	-508.9	-128.9	0.47	0.26	21.96
4,044.0	0.79	84.88	3,999.7	524.4	-508.9	-127.4	0.43	-0.41	-8.47
4,128.0	1.58	52.53	4,083.6	523.4	-508.1	-125.9	1.20	0.94	-38.51
4,212.0	1.71	64.09	4,167.6	521.7	-506.8	-123.9	0.42	0.15	13.76
4,297.0	1.01	69.76	4,252.6	520.5	-506.0	-122.0	0.84	-0.82	6.67
4,383.0	0.92	104.12	4,338.6	520.1	-505.9	-120.7	0.67	-0.10	39.95
4,469.0	0.53	121.61	4,424.6	520.2	-506.3	-119.6	0.52	-0.45	20.34

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4,553.0	0.62	196.54	4,508.6	520.8	-507.0	-119.4	0.84	0.11	89.20	
4,637.0	0.75	184.98	4,592.6	521.8	-507.9	-119.6	0.23	0.15	-13.76	
4,721.0	1.32	211.00	4,676.5	523.3	-509.3	-120.2	0.86	0.68	30.98	
4,806.0	1.45	168.86	4,761.5	525.2	-511.2	-120.5	1.18	0.15	-49.58	
4,892.0	1.89	128.56	4,847.5	526.8	-513.2	-119.1	1.42	0.51	-46.86	
4,978.0	2.02	160.15	4,933.4	528.7	-515.5	-117.5	1.25	0.15	36.73	
5,063.0	1.98	108.17	5,018.4	530.1	-517.3	-115.6	2.06	-0.05	-61.15	
5,149.0	2.89	48.53	5,104.3	528.5	-516.4	-112.6	2.96	1.06	-69.35	
5,233.0	2.54	38.47	5,188.2	525.1	-513.5	-109.8	0.70	-0.42	-11.98	
5,318.0	1.63	39.61	5,273.2	522.3	-511.1	-107.9	1.07	-1.07	1.34	
5,405.0	0.79	33.90	5,360.2	520.7	-509.7	-106.8	0.97	-0.97	-6.56	
5,575.0	1.01	212.98	5,530.2	521.0	-509.9	-106.9	1.06	0.13	105.34	
5,745.0	1.63	221.94	5,700.1	524.5	-513.0	-109.4	0.38	0.36	5.27	
5,872.0	2.07	231.83	5,827.0	527.8	-515.8	-112.4	0.43	0.35	7.79	
5,958.0	2.11	224.67	5,913.0	530.4	-517.8	-114.7	0.31	0.05	-8.33	
6,000.0	2.24	220.36	5,955.0	531.8	-519.0	-115.8	0.50	0.31	-10.26	
Last PZD Survey										
6,060.0	2.24	220.36	6,014.9	533.8	-520.8	-117.3	0.00	0.00	0.00	
Straightline Projection to TD										

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,670.0	1,653.1	-192.8	-46.2	Last PZD Surface Survey
6,000.0	5,955.0	-519.0	-115.8	Last PZD Survey
6,060.0	6,014.9	-520.8	-117.3	Straightline Projection to TD

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Checked By: _____
 Approved By: _____
 Date: _____

