



Ursa Operating Company, LLC

Rockies Region

BMC B

BMC B 43A-13-07-96

Wellbore #1

Design: Actual

End of Well Report

10 July, 2017



Company:	Ursa Operating Company, LLC	Local Co-ordinate Reference:	Well BMC B 43A-13-07-96
Project:	Rockies Region	TVD Reference:	BMC B 43A-13-07-96 @ 5117.0usft (Plan KB)
Site:	BMC B	MD Reference:	BMC B 43A-13-07-96 @ 5117.0usft (Plan KB)
Well:	BMC B 43A-13-07-96	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:		Slot Radius:		13-3/16 "	
				Latitude: 39.438867241	
				Longitude: -108.046501442	
				Grid Convergence: -1.61 °	

Well		BMC B 43A-13-07-96, SHL: Lat 39.438806676 Long -108.046446147				
Well Position	+N/-S	0.0 usft	Northing:	1,594,793.85 usft	Latitude:	39.438806676
	+E/-W	0.0 usft	Easting:	2,280,901.95 usft	Longitude:	-108.046446147
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	7/10/2017	9.71	65.53	51,492

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	242.99

Survey Program		Date	7/10/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
200.0	6,395.0	Actual (Wellbore #1)	MWD	MWD - Standard	

Company:	Ursa Operating Company, LLC	Local Co-ordinate Reference:	Well BMC B 43A-13-07-96
Project:	Rockies Region	TVD Reference:	BMC B 43A-13-07-96 @ 5117.0usft (Plan KB)
Site:	BMC B	MD Reference:	BMC B 43A-13-07-96 @ 5117.0usft (Plan KB)
Well:	BMC B 43A-13-07-96	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)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
200.0	0.48	184.32	200.0	0.4	-0.8	-0.1	0.24	0.24	0.00	
230.0	0.35	171.01	230.0	0.5	-1.1	-0.1	0.54	-0.43	-44.37	
259.0	0.26	183.49	259.0	0.6	-1.2	0.0	0.38	-0.31	43.03	
290.0	0.40	184.94	290.0	0.7	-1.4	-0.1	0.45	0.45	4.68	
319.0	0.31	213.02	319.0	0.8	-1.5	-0.1	0.67	-0.31	96.83	
349.0	0.75	257.93	349.0	1.1	-1.7	-0.3	1.91	1.47	149.70	
379.0	1.19	268.39	379.0	1.5	-1.7	-0.9	1.58	1.47	34.87	
410.0	1.20	253.38	410.0	2.1	-1.8	-1.5	1.01	0.03	-48.42	
439.0	0.55	247.69	439.0	2.6	-1.9	-1.9	2.26	-2.24	-19.62	
469.0	0.44	155.15	469.0	2.7	-2.1	-2.0	2.40	-0.37	-308.47	
499.0	0.57	165.43	499.0	2.8	-2.4	-1.9	0.53	0.43	34.27	
528.0	0.57	140.91	528.0	2.8	-2.6	-1.8	0.83	0.00	-84.55	
559.0	0.53	132.38	559.0	2.7	-2.8	-1.6	0.29	-0.13	-27.52	
589.0	0.26	52.36	589.0	2.6	-2.9	-1.4	1.83	-0.90	-266.73	
620.0	0.85	341.32	620.0	2.5	-2.6	-1.4	2.59	1.90	-229.16	
650.0	1.63	321.35	650.0	2.5	-2.1	-1.8	2.93	2.60	-66.57	
681.0	2.68	309.35	680.9	2.9	-1.3	-2.6	3.67	3.39	-38.71	
711.0	3.21	293.22	710.9	3.7	-0.5	-3.9	3.26	1.77	-53.77	
741.0	3.91	279.69	740.8	5.1	0.0	-5.7	3.63	2.33	-45.10	
771.0	4.75	275.51	770.8	6.9	0.3	-7.9	2.99	2.80	-13.93	
801.0	5.41	265.69	800.6	9.3	0.3	-10.6	3.63	2.20	-32.73	
831.0	5.89	254.83	830.5	12.1	-0.2	-13.5	3.90	1.60	-36.20	
873.0	6.79	247.64	872.2	16.7	-1.7	-17.9	2.85	2.14	-17.12	
915.0	7.25	242.20	913.9	21.8	-3.9	-22.5	1.92	1.10	-12.95	
958.0	9.32	236.88	956.5	28.0	-7.1	-27.8	5.13	4.81	-12.37	
1,000.0	10.81	235.43	997.8	35.3	-11.1	-33.9	3.60	3.55	-3.45	

Company:	Ursa Operating Company, LLC	Local Co-ordinate Reference:	Well BMC B 43A-13-07-96
Project:	Rockies Region	TVD Reference:	BMC B 43A-13-07-96 @ 5117.0usft (Plan KB)
Site:	BMC B	MD Reference:	BMC B 43A-13-07-96 @ 5117.0usft (Plan KB)
Well:	BMC B 43A-13-07-96	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)	
1,042.0	12.17	238.25	1,039.0	43.6	-15.7	-40.9	3.50	3.24	6.71	
1,084.0	13.58	242.99	1,079.9	52.9	-20.3	-49.1	4.19	3.36	11.29	
1,126.0	15.64	243.87	1,120.6	63.5	-25.0	-58.6	4.93	4.90	2.10	
1,168.0	17.14	243.96	1,160.9	75.4	-30.2	-69.2	3.57	3.57	0.21	
1,210.0	18.68	244.00	1,200.8	88.3	-35.9	-80.8	3.67	3.67	0.10	
1,253.0	20.42	243.06	1,241.3	102.7	-42.3	-93.7	4.11	4.05	-2.19	
1,295.0	21.36	242.82	1,280.6	117.7	-49.1	-107.0	2.25	2.24	-0.57	
1,338.0	22.19	242.42	1,320.5	133.6	-56.5	-121.2	1.96	1.93	-0.93	
1,380.0	23.98	242.73	1,359.2	150.1	-64.0	-135.8	4.27	4.26	0.74	
1,422.0	25.75	242.46	1,397.3	167.7	-72.2	-151.5	4.22	4.21	-0.64	
1,464.0	26.98	242.42	1,434.9	186.4	-80.8	-168.0	2.93	2.93	-0.10	
1,506.0	28.39	242.24	1,472.1	205.9	-89.9	-185.3	3.36	3.36	-0.43	
1,548.0	29.57	241.82	1,508.8	226.2	-99.4	-203.3	2.85	2.81	-1.00	
1,590.0	30.50	241.72	1,545.2	247.3	-109.3	-221.8	2.22	2.21	-0.24	
1,632.0	31.77	242.99	1,581.1	269.0	-119.4	-241.0	3.40	3.02	3.02	
1,675.0	32.83	244.18	1,617.5	291.9	-129.6	-261.6	2.87	2.47	2.77	
1,717.0	33.49	244.00	1,652.6	314.9	-139.7	-282.3	1.59	1.57	-0.43	
1,755.0	35.39	244.37	1,684.0	336.4	-149.0	-301.6	5.03	5.00	0.97	
Last PZD Surface Survey										
1,831.0	36.64	244.91	1,745.4	381.1	-168.2	-342.0	1.70	1.64	0.71	
1,917.0	36.87	244.53	1,814.3	432.5	-190.1	-388.5	0.38	0.27	-0.44	
2,003.0	37.66	244.35	1,882.8	484.6	-212.6	-435.5	0.93	0.92	-0.21	
2,090.0	37.49	243.21	1,951.7	537.6	-236.1	-483.1	0.82	-0.20	-1.31	
2,176.0	38.63	242.46	2,019.5	590.6	-260.3	-530.3	1.43	1.33	-0.87	
2,261.0	37.80	241.49	2,086.2	643.2	-285.0	-576.7	1.20	-0.98	-1.14	
2,347.0	38.41	241.15	2,153.9	696.2	-310.4	-623.2	0.75	0.71	-0.40	
2,431.0	38.42	242.14	2,219.7	748.4	-335.2	-669.2	0.73	0.01	1.18	

Company:	Ursa Operating Company, LLC	Local Co-ordinate Reference:	Well BMC B 43A-13-07-96
Project:	Rockies Region	TVD Reference:	BMC B 43A-13-07-96 @ 5117.0usft (Plan KB)
Site:	BMC B	MD Reference:	BMC B 43A-13-07-96 @ 5117.0usft (Plan KB)
Well:	BMC B 43A-13-07-96	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)	
2,516.0	38.72	242.33	2,286.2	801.4	-359.9	-716.1	0.38	0.35	0.22	
2,600.0	38.19	243.34	2,352.0	853.7	-383.8	-762.5	0.98	-0.63	1.20	
2,684.0	38.23	244.62	2,418.0	905.6	-406.6	-809.2	0.94	0.05	1.52	
2,769.0	37.40	243.91	2,485.1	957.7	-429.2	-856.2	1.10	-0.98	-0.84	
2,853.0	37.49	244.97	2,551.8	1,008.8	-451.2	-902.2	0.77	0.11	1.26	
2,938.0	37.92	245.23	2,619.1	1,060.7	-473.1	-949.4	0.54	0.51	0.31	
3,022.0	37.13	244.05	2,685.7	1,111.8	-495.0	-995.6	1.27	-0.94	-1.40	
3,106.0	35.24	244.27	2,753.5	1,161.4	-516.6	-1,040.3	2.26	-2.25	0.26	
3,192.0	33.08	245.21	2,824.6	1,209.7	-537.2	-1,083.9	2.59	-2.51	1.09	
3,277.0	30.01	243.34	2,897.1	1,254.1	-556.5	-1,124.0	3.79	-3.61	-2.20	
3,361.0	26.98	244.00	2,970.9	1,294.2	-574.3	-1,159.9	3.63	-3.61	0.79	
3,445.0	24.26	245.15	3,046.6	1,330.5	-589.9	-1,192.7	3.29	-3.24	1.37	
3,529.0	21.71	245.98	3,123.9	1,363.3	-603.5	-1,222.6	3.06	-3.04	0.99	
3,614.0	18.50	244.75	3,203.8	1,392.5	-615.6	-1,249.1	3.81	-3.78	-1.45	
3,698.0	15.56	240.75	3,284.1	1,417.0	-626.8	-1,271.0	3.77	-3.50	-4.76	
3,782.0	13.58	244.00	3,365.4	1,438.2	-636.7	-1,289.7	2.55	-2.36	3.87	
3,867.0	11.03	242.73	3,448.4	1,456.3	-644.8	-1,305.9	3.02	-3.00	-1.49	
3,951.0	8.46	244.03	3,531.2	1,470.5	-651.1	-1,318.6	3.07	-3.06	1.55	
4,035.0	5.98	249.19	3,614.5	1,481.0	-655.4	-1,328.2	3.05	-2.95	6.14	
4,120.0	3.30	242.22	3,699.2	1,487.9	-658.1	-1,334.6	3.22	-3.15	-8.20	
4,175.3	1.67	240.62	3,754.4	1,490.3	-659.3	-1,336.7	2.96	-2.96	-2.90	
43A-13-07-96 TGT										
4,205.0	0.79	237.02	3,784.2	1,490.9	-659.6	-1,337.2	2.96	-2.95	-12.11	
4,289.0	1.45	28.58	3,868.2	1,490.6	-659.0	-1,337.2	2.59	0.79	180.43	
4,373.0	0.92	39.00	3,952.1	1,489.1	-657.5	-1,336.3	0.68	-0.63	12.40	
4,458.0	0.70	52.75	4,037.1	1,488.0	-656.7	-1,335.4	0.34	-0.26	16.18	
4,542.0	0.22	62.64	4,121.1	1,487.3	-656.3	-1,334.9	0.58	-0.57	11.77	

Company:	Ursa Operating Company, LLC	Local Co-ordinate Reference:	Well BMC B 43A-13-07-96
Project:	Rockies Region	TVD Reference:	BMC B 43A-13-07-96 @ 5117.0usft (Plan KB)
Site:	BMC B	MD Reference:	BMC B 43A-13-07-96 @ 5117.0usft (Plan KB)
Well:	BMC B 43A-13-07-96	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)	
4,628.0	0.40	279.47	4,207.1	1,487.4	-656.1	-1,335.0	0.69	0.21	-166.48	
4,713.0	0.59	248.37	4,292.1	1,488.1	-656.3	-1,335.7	0.38	0.22	-36.59	
4,797.0	1.05	247.91	4,376.1	1,489.3	-656.7	-1,336.8	0.55	0.55	-0.55	
4,881.0	1.45	246.16	4,460.1	1,491.1	-657.4	-1,338.5	0.48	0.48	-2.08	
4,966.0	0.57	347.27	4,545.1	1,492.0	-657.5	-1,339.6	1.95	-1.04	118.95	
5,050.0	1.93	67.91	4,629.1	1,490.5	-656.5	-1,338.4	2.29	1.62	96.00	
5,136.0	1.45	71.82	4,715.0	1,488.0	-655.6	-1,336.0	0.57	-0.56	4.55	
5,224.0	0.90	89.46	4,803.0	1,486.3	-655.3	-1,334.2	0.74	-0.62	20.05	
5,313.0	0.65	150.99	4,892.0	1,485.7	-655.7	-1,333.3	0.92	-0.28	69.13	
5,397.0	0.92	190.52	4,976.0	1,486.1	-656.8	-1,333.2	0.70	0.32	47.06	
5,481.0	0.92	193.25	5,060.0	1,486.9	-658.1	-1,333.5	0.05	0.00	3.25	
5,566.0	1.05	190.04	5,145.0	1,487.8	-659.5	-1,333.8	0.17	0.15	-3.78	
5,650.0	1.27	199.18	5,229.0	1,488.9	-661.2	-1,334.2	0.34	0.26	10.88	
5,735.0	0.62	115.77	5,313.9	1,489.3	-662.3	-1,334.1	1.59	-0.76	-98.13	
5,819.0	1.04	124.00	5,397.9	1,488.7	-662.9	-1,333.1	0.52	0.50	9.80	
5,907.0	1.49	152.42	5,485.9	1,488.3	-664.4	-1,331.9	0.86	0.51	32.30	
5,994.0	1.67	166.53	5,572.9	1,488.6	-666.6	-1,331.0	0.49	0.21	16.22	
6,080.0	1.54	173.16	5,658.8	1,489.3	-669.0	-1,330.6	0.26	-0.15	7.71	
6,164.0	1.93	191.93	5,742.8	1,490.6	-671.5	-1,330.8	0.81	0.46	22.35	
6,248.0	1.98	202.56	5,826.8	1,492.6	-674.2	-1,331.6	0.44	0.06	12.65	
6,335.0	2.46	196.72	5,913.7	1,495.0	-677.4	-1,332.7	0.61	0.55	-6.71	
Last PZD Survey										
6,395.0	2.46	196.72	5,973.6	1,496.8	-679.8	-1,333.5	0.00	0.00	0.00	
Straightline Projection to TD										

Company:	Ursa Operating Company, LLC	Local Co-ordinate Reference:	Well BMC B 43A-13-07-96
Project:	Rockies Region	TVD Reference:	BMC B 43A-13-07-96 @ 5117.0usft (Plan KB)
Site:	BMC B	MD Reference:	BMC B 43A-13-07-96 @ 5117.0usft (Plan KB)
Well:	BMC B 43A-13-07-96	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM 5000.1 Single User Db

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,755.0	1,684.0	-149.0	-301.6	Last PZD Surface Survey
6,335.0	5,913.7	-677.4	-1,332.7	Last PZD Survey
6,395.0	5,973.6	-679.8	-1,333.5	Straightline Projection to TD

Checked By: _____	Approved By: _____	Date: _____
-------------------	--------------------	-------------

