



Ursa Operating Company, LLC

Rockies Region

BMC B

BMC B 14A-18-07-95

Wellbore #1

Design: Actual

End of Well Report

07 June, 2017



Company:	Ursa Operating Company, LLC	Local Co-ordinate Reference:	Well BMC B 14A-18-07-95
Project:	Rockies Region	TVD Reference:	BMC B 14A-18-07-95 @ 5117.0usft (Plan KB)
Site:	BMC B	MD Reference:	BMC B 14A-18-07-95 @ 5117.0usft (Plan KB)
Well:	BMC B 14A-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:		Slot Radius:		13-3/16 "	
				Latitude: 39.438867241	
				Longitude: -108.046501442	
				Grid Convergence: -1.61 °	

Well		BMC B 14A-18-07-95, SHL: Lat 39.438800524 Long -108.046729153				
Well Position	+N/-S	0.0 usft	Northing:	1,594,793.86 usft	Latitude:	39.438800524
	+E/-W	0.0 usft	Easting:	2,280,821.99 usft	Longitude:	-108.046729153
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	6/7/2017	9.72	65.53	51,502

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	180.85

Survey Program		Date	6/7/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
137.0	6,480.0	Actual (Wellbore #1)	MWD	MWD - Standard	

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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	
137.0	0.26	55.43	137.0	-0.2	0.2	0.3	0.19	0.19	0.00	
167.0	0.13	152.07	167.0	-0.2	0.2	0.3	1.01	-0.43	322.13	
197.0	0.09	110.54	197.0	-0.2	0.1	0.4	0.29	-0.13	-138.43	
227.0	0.26	111.42	227.0	-0.1	0.1	0.5	0.57	0.57	2.93	
257.0	0.40	111.24	257.0	-0.1	0.1	0.6	0.47	0.47	-0.60	
288.0	0.53	191.00	288.0	0.1	-0.1	0.7	1.95	0.42	257.29	
318.0	1.37	186.68	318.0	0.6	-0.6	0.6	2.81	2.80	-14.40	
348.0	2.37	184.85	348.0	1.6	-1.6	0.5	3.34	3.33	-6.10	
379.0	2.99	184.37	378.9	3.0	-3.0	0.4	2.00	2.00	-1.55	
409.0	3.65	182.79	408.9	4.8	-4.8	0.3	2.22	2.20	-5.27	
440.0	5.02	180.54	439.8	7.1	-7.1	0.2	4.45	4.42	-7.26	
470.0	6.28	178.08	469.7	10.1	-10.1	0.3	4.28	4.20	-8.20	
501.0	7.60	184.76	500.4	13.8	-13.8	0.2	4.98	4.26	21.55	
532.0	8.13	184.94	531.1	18.0	-18.0	-0.2	1.71	1.71	0.58	
562.0	8.79	180.33	560.8	22.4	-22.4	-0.4	3.15	2.20	-15.37	
592.0	9.85	179.95	590.4	27.3	-27.3	-0.4	3.54	3.53	-1.27	
623.0	10.77	178.44	620.9	32.8	-32.8	-0.3	3.09	2.97	-4.87	
653.0	11.56	182.13	650.3	38.7	-38.7	-0.3	3.55	2.63	12.30	
684.0	12.42	180.84	680.7	45.1	-45.1	-0.5	2.91	2.77	-4.16	
715.0	13.45	181.60	710.9	52.0	-52.0	-0.7	3.37	3.32	2.45	
745.0	14.55	181.26	740.0	59.3	-59.3	-0.8	3.68	3.67	-1.13	
787.0	16.13	180.94	780.5	70.4	-70.4	-1.1	3.77	3.76	-0.76	
830.0	17.53	181.03	821.7	82.8	-82.8	-1.3	3.26	3.26	0.21	
872.0	19.07	181.60	861.5	96.0	-96.0	-1.6	3.69	3.67	1.36	
914.0	20.21	183.45	901.1	110.1	-110.1	-2.2	3.09	2.71	4.40	
956.0	21.31	183.31	940.4	125.0	-125.0	-3.1	2.62	2.62	-0.33	

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Well:	BMC B 14A-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)	
998.0	22.98	182.87	979.3	140.8	-140.8	-3.9	4.00	3.98	-1.05	
1,040.0	24.30	182.74	1,017.7	157.7	-157.6	-4.8	3.15	3.14	-0.31	
1,083.0	25.53	182.92	1,056.7	175.8	-175.7	-5.7	2.87	2.86	0.42	
1,125.0	27.20	182.04	1,094.4	194.4	-194.3	-6.5	4.08	3.98	-2.10	
1,167.0	28.92	182.30	1,131.4	214.2	-214.1	-7.2	4.11	4.10	0.62	
1,209.0	30.67	182.35	1,167.9	235.0	-234.9	-8.0	4.17	4.17	0.12	
1,251.0	32.21	180.90	1,203.7	256.9	-256.8	-8.7	4.08	3.67	-3.45	
1,293.0	33.84	180.06	1,238.9	279.8	-279.7	-8.9	4.03	3.88	-2.00	
1,335.0	35.68	180.24	1,273.4	303.8	-303.7	-8.9	4.39	4.38	0.43	
1,377.0	37.53	180.28	1,307.1	328.8	-328.7	-9.0	4.41	4.40	0.10	
1,420.0	38.80	180.59	1,340.9	355.4	-355.3	-9.2	2.99	2.95	0.72	
1,462.0	39.59	179.84	1,373.5	381.9	-381.8	-9.3	2.19	1.88	-1.79	
1,504.0	40.21	179.93	1,405.7	408.8	-408.8	-9.3	1.48	1.48	0.21	
1,546.0	38.76	181.03	1,438.1	435.6	-435.5	-9.5	3.83	-3.45	2.62	
1,588.0	37.40	180.55	1,471.2	461.5	-461.4	-9.9	3.31	-3.24	-1.14	
1,630.0	37.09	180.37	1,504.6	486.9	-486.8	-10.1	0.78	-0.74	-0.43	
1,672.0	37.38	180.34	1,538.1	512.3	-512.2	-10.2	0.69	0.69	-0.07	
1,714.0	37.66	179.93	1,571.4	537.9	-537.8	-10.3	0.89	0.67	-0.98	
1,757.0	37.57	178.22	1,605.4	564.1	-564.0	-9.9	2.44	-0.21	-3.98	
1,799.0	37.95	179.05	1,638.6	589.8	-589.7	-9.2	1.51	0.90	1.98	
1,840.0	37.62	180.72	1,671.0	614.9	-614.8	-9.2	2.62	-0.80	4.07	
Last PZD Surface Survey										
1,920.0	38.23	181.73	1,734.1	664.1	-664.0	-10.2	1.09	0.76	1.26	
2,005.0	37.66	179.53	1,801.2	716.3	-716.3	-10.8	1.73	-0.67	-2.59	
2,089.0	38.06	178.70	1,867.5	767.9	-767.8	-10.0	0.77	0.48	-0.99	
2,177.0	38.94	180.06	1,936.4	822.6	-822.6	-9.4	1.39	1.00	1.55	
2,266.0	38.19	178.30	2,006.0	878.1	-878.0	-8.7	1.49	-0.84	-1.98	

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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)	
2,350.0	38.14	179.23	2,072.0	929.9	-929.9	-7.5	0.69	-0.06	1.11	
2,434.0	37.79	180.24	2,138.2	981.6	-981.6	-7.3	0.85	-0.42	1.20	
2,518.0	37.44	179.84	2,204.8	1,032.9	-1,032.9	-7.3	0.51	-0.42	-0.48	
2,603.0	38.32	180.24	2,271.9	1,085.1	-1,085.1	-7.4	1.07	1.04	0.47	
2,690.0	38.36	181.16	2,340.1	1,139.0	-1,139.0	-8.0	0.66	0.05	1.06	
2,777.0	37.79	180.72	2,408.6	1,192.7	-1,192.7	-8.9	0.73	-0.66	-0.51	
2,862.0	36.97	179.38	2,476.1	1,244.3	-1,244.3	-9.0	1.36	-0.96	-1.58	
2,947.0	36.61	178.17	2,544.2	1,295.1	-1,295.2	-7.9	0.95	-0.42	-1.42	
3,032.0	35.95	175.98	2,612.7	1,345.3	-1,345.4	-5.3	1.71	-0.78	-2.58	
3,117.0	34.85	177.78	2,682.0	1,394.4	-1,394.6	-2.6	1.78	-1.29	2.12	
3,203.0	33.44	179.40	2,753.2	1,442.7	-1,442.8	-1.4	1.95	-1.64	1.88	
3,288.0	31.55	181.91	2,824.9	1,488.3	-1,488.5	-1.9	2.73	-2.22	2.95	
3,373.0	29.22	180.59	2,898.2	1,531.3	-1,531.4	-2.9	2.85	-2.74	-1.55	
3,458.0	28.56	180.46	2,972.6	1,572.4	-1,572.5	-3.3	0.78	-0.78	-0.15	
3,543.0	26.15	178.39	3,048.1	1,611.4	-1,611.5	-2.9	3.05	-2.84	-2.44	
3,628.0	22.85	183.27	3,125.5	1,646.6	-1,646.8	-3.3	4.55	-3.88	5.74	
3,712.0	19.82	184.72	3,203.7	1,677.1	-1,677.2	-5.4	3.66	-3.61	1.73	
3,796.0	16.74	184.76	3,283.4	1,703.4	-1,703.5	-7.6	3.67	-3.67	0.05	
3,880.0	14.24	179.40	3,364.4	1,725.8	-1,725.9	-8.5	3.43	-2.98	-6.38	
3,965.0	11.16	176.55	3,447.3	1,744.5	-1,744.6	-7.9	3.70	-3.62	-3.35	
4,049.0	9.27	182.83	3,530.0	1,759.4	-1,759.4	-7.7	2.61	-2.25	7.48	
4,133.0	6.59	182.70	3,613.2	1,770.9	-1,771.0	-8.3	3.19	-3.19	-0.15	
4,218.0	4.39	190.35	3,697.8	1,779.0	-1,779.1	-9.1	2.72	-2.59	9.00	
4,279.9	2.32	188.34	3,759.6	1,782.6	-1,782.6	-9.7	3.35	-3.35	-3.25	
14A-18-07-95 TGT										
4,302.0	1.58	186.35	3,781.6	1,783.3	-1,783.4	-9.8	3.35	-3.34	-9.02	
4,386.0	1.05	19.93	3,865.6	1,783.8	-1,783.8	-9.7	3.11	-0.63	-198.12	

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Survey										
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4,470.0	1.32	5.25	3,949.6	1,782.1	-1,782.1	-9.3	0.48	0.32	-17.48	
4,555.0	1.32	327.41	4,034.6	1,780.3	-1,780.3	-9.8	1.01	0.00	-44.52	
4,641.0	1.32	327.32	4,120.6	1,778.6	-1,778.7	-10.8	0.00	0.00	-0.10	
4,725.0	1.23	308.25	4,204.5	1,777.3	-1,777.3	-12.1	0.51	-0.11	-22.70	
4,810.0	1.85	288.83	4,289.5	1,776.3	-1,776.3	-14.1	0.94	0.73	-22.85	
4,898.0	2.24	282.41	4,377.5	1,775.5	-1,775.5	-17.1	0.51	0.44	-7.30	
4,986.0	1.54	217.24	4,465.4	1,776.1	-1,776.0	-19.5	2.41	-0.80	-74.06	
5,074.0	1.98	212.14	4,553.4	1,778.4	-1,778.3	-21.0	0.53	0.50	-5.80	
5,161.0	2.07	222.47	4,640.3	1,780.8	-1,780.7	-22.9	0.43	0.10	11.87	
5,245.0	2.55	223.48	4,724.3	1,783.3	-1,783.2	-25.2	0.57	0.57	1.20	
5,331.0	0.18	299.11	4,810.2	1,784.7	-1,784.5	-26.6	2.92	-2.76	87.94	
5,417.0	0.43	271.46	4,896.2	1,784.6	-1,784.4	-27.1	0.33	0.29	-32.15	
5,503.0	1.14	262.64	4,982.2	1,784.7	-1,784.5	-28.2	0.84	0.83	-10.26	
5,589.0	1.49	248.09	5,068.2	1,785.3	-1,785.0	-30.1	0.56	0.41	-16.92	
5,678.0	0.44	253.93	5,157.2	1,785.8	-1,785.6	-31.5	1.18	-1.18	6.56	
5,766.0	1.05	235.70	5,245.2	1,786.4	-1,786.1	-32.5	0.74	0.69	-20.72	
5,850.0	1.54	193.33	5,329.2	1,787.9	-1,787.6	-33.4	1.24	0.58	-50.44	
5,935.0	2.13	106.00	5,414.1	1,789.5	-1,789.2	-32.1	3.02	0.69	-102.74	
6,019.0	1.76	122.27	5,498.1	1,790.6	-1,790.3	-29.6	0.79	-0.44	19.37	
6,103.0	1.05	107.46	5,582.0	1,791.4	-1,791.2	-27.7	0.94	-0.85	-17.63	
6,187.0	0.31	134.18	5,666.0	1,791.8	-1,791.6	-26.8	0.94	-0.88	31.81	
6,276.0	0.26	221.24	5,755.0	1,792.1	-1,791.9	-26.8	0.44	-0.06	97.82	
6,363.0	0.44	237.02	5,842.0	1,792.5	-1,792.3	-27.2	0.23	0.21	18.14	
6,420.0	0.22	249.06	5,899.0	1,792.6	-1,792.4	-27.5	0.40	-0.39	21.12	
Last PZD Survey										
6,480.0	0.22	249.06	5,959.0	1,792.7	-1,792.5	-27.7	0.00	0.00	0.00	
Straightline Projection to TD										

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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)	
1,840.0	1,671.0	-614.8	-9.2	Last PZD Surface Survey
6,420.0	5,899.0	-1,792.4	-27.5	Last PZD Survey
6,480.0	5,959.0	-1,792.5	-27.7	Straightline Projection to TD

Checked By: _____	Approved By: _____	Date: _____
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