



Ursa Operating Company, LLC

Rockies Region

BMC D

BMC D 21D-18-07-95

Wellbore #1

Design: Actual

End of Well Report

08 May, 2017



Company:	Ursa Operating Company, LLC	Local Co-ordinate Reference:	Well BMC D 21D-18-07-95
Project:	Rockies Region	TVD Reference:	BMC D 21D-18-07-95 @ 5285.0usft (Plan KB)
Site:	BMC D	MD Reference:	BMC D 21D-18-07-95 @ 5285.0usft (Plan KB)
Well:	BMC D 21D-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 D			
Site Position:		Northing:		1,595,755.80 usft	
From:	Lat/Long	Easting:		2,282,541.08 usft	
Position Uncertainty:		Slot Radius:		13-3/16 "	
				Latitude: 39.441572650	
				Longitude: -108.040739971	
				Grid Convergence: -1.60 °	

Well		BMC D 21D-18-07-95, SHL Lat: 39.441629797 Long: -108.040507962				
Well Position	+N/-S	0.0 usft	Northing:	1,595,774.78 usft	Latitude:	39.441629797
	+E/-W	0.0 usft	Easting:	2,282,607.16 usft	Longitude:	-108.040507962
Position Uncertainty		0.0 usft	Wellhead Elevation:	5,285.0 usft	Ground Level:	5,268.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/8/2017	9.73	65.54	51,512

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	263.15

Survey Program		Date	5/8/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
109.0	6,315.0	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	
109.0	1.32	257.68	109.0	1.2	-0.3	-1.2	1.21	1.21	0.00	
138.0	1.41	252.54	138.0	1.9	-0.4	-1.9	0.52	0.31	-17.72	
167.0	1.23	260.23	167.0	2.6	-0.6	-2.5	0.87	-0.62	26.52	
198.0	1.01	256.93	198.0	3.2	-0.7	-3.1	0.74	-0.71	-10.65	
228.0	0.82	246.49	228.0	3.7	-0.9	-3.6	0.84	-0.63	-34.80	
259.0	0.15	188.64	259.0	3.9	-1.0	-3.8	2.42	-2.16	-186.61	
289.0	0.31	154.01	289.0	3.9	-1.1	-3.8	0.68	0.53	-115.43	
320.0	0.53	63.66	320.0	3.7	-1.1	-3.6	1.99	0.71	-291.45	
350.0	0.70	69.68	350.0	3.4	-1.0	-3.3	0.61	0.57	20.07	
381.0	0.88	74.38	381.0	3.0	-0.9	-2.9	0.62	0.58	15.16	
411.0	1.01	77.06	411.0	2.5	-0.7	-2.4	0.46	0.43	8.93	
442.0	1.10	77.63	441.9	1.9	-0.6	-1.9	0.29	0.29	1.84	
472.0	1.19	71.22	471.9	1.3	-0.5	-1.3	0.52	0.30	-21.37	
503.0	0.97	72.19	502.9	0.8	-0.3	-0.7	0.71	-0.71	3.13	
533.0	1.19	80.01	532.9	0.2	-0.1	-0.2	0.88	0.73	26.07	
564.0	1.23	75.75	563.9	-0.5	0.0	0.5	0.32	0.13	-13.74	
594.0	1.19	69.90	593.9	-1.1	0.2	1.1	0.43	-0.13	-19.50	
625.0	1.05	72.19	624.9	-1.7	0.4	1.6	0.47	-0.45	7.39	
655.0	0.66	10.22	654.9	-2.0	0.6	1.9	3.14	-1.30	-206.57	
686.0	1.27	346.80	685.9	-2.0	1.1	1.9	2.30	1.97	-75.55	
717.0	1.45	334.45	716.9	-1.8	1.8	1.6	1.11	0.58	-39.84	
747.0	1.76	328.78	746.9	-1.5	2.6	1.2	1.16	1.03	-18.90	
778.0	2.50	310.94	777.9	-0.9	3.4	0.5	3.18	2.39	-57.55	
808.0	3.03	308.13	807.8	0.1	4.3	-0.6	1.82	1.77	-9.37	
839.0	3.78	298.72	838.8	1.5	5.3	-2.2	3.01	2.42	-30.35	
881.0	4.89	285.35	880.7	4.3	6.5	-5.1	3.56	2.64	-31.83	

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Site:	BMC D	MD Reference:	BMC D 21D-18-07-95 @ 5285.0usft (Plan KB)
Well:	BMC D 21D-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)	
923.0	5.54	275.78	922.5	8.0	7.2	-8.9	2.58	1.55	-22.79	
965.0	5.71	272.09	964.3	12.0	7.4	-13.0	0.95	0.40	-8.79	
1,007.0	5.93	270.78	1,006.1	16.2	7.5	-17.2	0.61	0.52	-3.12	
1,050.0	6.94	267.70	1,048.8	21.0	7.5	-22.1	2.48	2.35	-7.16	
1,092.0	7.95	266.30	1,090.4	26.4	7.2	-27.5	2.44	2.40	-3.33	
1,134.0	8.66	266.51	1,132.0	32.5	6.8	-33.5	1.69	1.69	0.50	
1,176.0	9.32	266.16	1,173.5	39.0	6.4	-40.1	1.58	1.57	-0.83	
1,218.0	9.61	265.44	1,214.9	45.9	5.9	-47.0	0.75	0.69	-1.71	
1,260.0	9.80	266.03	1,256.3	53.0	5.3	-54.0	0.51	0.45	1.40	
1,302.0	9.93	265.99	1,297.7	60.2	4.8	-61.2	0.31	0.31	-0.10	
1,344.0	10.11	263.88	1,339.0	67.5	4.2	-68.5	0.97	0.43	-5.02	
1,387.0	9.67	260.54	1,381.4	74.9	3.2	-75.8	1.68	-1.02	-7.77	
1,429.0	9.49	261.77	1,422.8	81.9	2.1	-82.7	0.65	-0.43	2.93	
1,471.0	8.88	261.68	1,464.3	88.6	1.2	-89.3	1.45	-1.45	-0.21	
1,513.0	9.18	260.01	1,505.8	95.2	0.1	-95.9	0.95	0.71	-3.98	
1,555.0	9.32	262.47	1,547.2	101.9	-0.9	-102.5	1.00	0.33	5.86	
1,597.0	9.18	263.74	1,588.7	108.7	-1.7	-109.2	0.59	-0.33	3.02	
1,640.0	8.92	262.07	1,631.1	115.4	-2.6	-115.9	0.86	-0.60	-3.88	
1,681.0	9.10	263.22	1,671.6	121.8	-3.4	-122.3	0.62	0.44	2.80	
Last PZD Surface Survey										
1,744.0	8.61	266.78	1,733.9	131.5	-4.2	-132.0	1.17	-0.78	5.65	
1,828.0	8.61	266.78	1,816.9	144.1	-4.9	-144.5	0.00	0.00	0.00	
1,912.0	9.10	258.12	1,899.9	157.0	-6.7	-157.3	1.69	0.58	-10.31	
1,996.0	9.18	260.00	1,982.9	170.3	-9.2	-170.4	0.37	0.10	2.24	
2,081.0	10.72	267.87	2,066.6	184.9	-10.7	-185.0	2.41	1.81	9.26	
2,165.0	10.28	266.60	2,149.2	200.2	-11.4	-200.3	0.59	-0.52	-1.51	
2,249.0	9.62	264.49	2,231.9	214.7	-12.5	-214.7	0.90	-0.79	-2.51	

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Survey										
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2,333.0	9.41	264.61	2,314.8	228.6	-13.8	-228.6	0.25	-0.25	0.14	
2,418.0	9.89	265.11	2,398.6	242.8	-15.1	-242.7	0.57	0.56	0.59	
2,502.0	9.89	263.26	2,481.3	257.2	-16.6	-257.1	0.38	0.00	-2.20	
2,586.0	9.62	262.07	2,564.1	271.5	-18.4	-271.2	0.40	-0.32	-1.42	
2,671.0	9.18	262.56	2,648.0	285.4	-20.3	-285.0	0.53	-0.52	0.58	
2,755.0	9.98	265.50	2,730.8	299.3	-21.7	-298.9	1.12	0.95	3.50	
2,839.0	9.93	263.61	2,813.5	313.8	-23.1	-313.3	0.39	-0.06	-2.25	
2,923.0	9.67	263.96	2,896.3	328.1	-24.6	-327.5	0.32	-0.31	0.42	
3,007.0	8.96	265.50	2,979.2	341.7	-25.9	-341.1	0.90	-0.85	1.83	
3,092.0	8.48	263.66	3,063.2	354.6	-27.1	-353.9	0.65	-0.56	-2.16	
3,176.0	8.35	264.97	3,146.3	366.9	-28.3	-366.1	0.28	-0.15	1.56	
3,260.0	7.87	259.35	3,229.5	378.7	-29.9	-377.9	1.10	-0.57	-6.69	
3,345.0	8.79	266.29	3,313.6	391.0	-31.4	-390.1	1.60	1.08	8.16	
3,429.0	8.44	264.80	3,396.6	403.6	-32.4	-402.6	0.49	-0.42	-1.77	
3,513.0	8.23	263.47	3,479.7	415.8	-33.6	-414.7	0.34	-0.25	-1.58	
3,598.0	7.78	262.03	3,563.9	427.6	-35.1	-426.5	0.58	-0.53	-1.69	
3,682.0	7.34	261.20	3,647.2	438.7	-36.7	-437.4	0.54	-0.52	-0.99	
3,766.0	7.29	260.27	3,730.5	449.3	-38.4	-448.0	0.15	-0.06	-1.11	
3,851.0	4.97	265.77	3,815.0	458.4	-39.6	-456.9	2.81	-2.73	6.47	
3,935.0	2.42	263.30	3,898.8	463.8	-40.1	-462.3	3.04	-3.04	-2.94	
4,019.0	0.92	299.16	3,982.8	466.1	-40.0	-464.7	2.09	-1.79	42.69	
4,104.0	1.19	108.75	4,067.8	465.9	-39.9	-464.4	2.47	0.32	199.52	
4,108.0	1.21	109.25	4,071.8	465.8	-39.9	-464.4	0.61	0.55	12.64	
21D-18-07-95 TGT										
4,188.0	1.67	116.48	4,151.7	464.1	-40.7	-462.5	0.61	0.57	9.03	
4,272.0	1.49	117.45	4,235.7	462.2	-41.8	-460.5	0.22	-0.21	1.15	
4,357.0	1.45	131.42	4,320.7	460.5	-43.0	-458.7	0.42	-0.05	16.44	

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4,441.0	1.45	143.64	4,404.7	459.3	-44.6	-457.2	0.37	0.00	14.55	
4,525.0	1.27	158.14	4,488.6	458.5	-46.3	-456.3	0.46	-0.21	17.26	
4,610.0	0.66	62.87	4,573.6	457.8	-46.9	-455.5	1.75	-0.72	-112.08	
4,694.0	0.18	25.47	4,657.6	457.3	-46.6	-455.0	0.63	-0.57	-44.52	
4,778.0	0.12	342.17	4,741.6	457.2	-46.4	-455.0	0.15	-0.07	-51.55	
4,863.0	0.40	237.95	4,826.6	457.5	-46.5	-455.2	0.52	0.33	-122.61	
4,947.0	0.48	194.84	4,910.6	457.9	-47.0	-455.6	0.39	0.10	-51.32	
5,031.0	0.66	353.17	4,994.6	458.1	-46.8	-455.7	1.33	0.21	188.49	
5,115.4	0.40	11.67	5,079.0	458.0	-46.1	-455.7	0.36	-0.31	21.92	
5,200.0	0.35	321.49	5,163.6	458.0	-45.6	-455.8	0.38	-0.06	-59.31	
5,284.0	1.23	34.66	5,247.6	457.5	-44.6	-455.5	1.40	1.05	87.11	
5,369.0	0.75	17.08	5,332.6	456.7	-43.3	-454.8	0.66	-0.56	-20.68	
5,453.0	0.40	328.70	5,416.6	456.6	-42.6	-454.8	0.68	-0.42	-57.60	
5,537.0	0.18	256.01	5,500.6	456.9	-42.3	-455.1	0.46	-0.26	-86.54	
5,622.0	0.44	222.66	5,585.6	457.2	-42.6	-455.4	0.36	0.31	-39.24	
5,706.0	1.07	212.70	5,669.6	458.0	-43.5	-456.1	0.76	0.75	-11.86	
5,790.0	1.54	221.91	5,753.6	459.3	-45.0	-457.2	0.61	0.56	10.96	
5,874.0	1.80	233.16	5,837.5	461.3	-46.6	-459.0	0.50	0.31	13.39	
5,958.0	2.42	235.79	5,921.5	464.0	-48.4	-461.6	0.75	0.74	3.13	
6,043.0	2.37	241.24	6,006.4	467.3	-50.3	-464.6	0.27	-0.06	6.41	
6,127.0	2.72	231.09	6,090.3	470.6	-52.4	-467.7	0.68	0.42	-12.08	
6,211.0	2.42	235.79	6,174.2	473.8	-54.6	-470.7	0.44	-0.36	5.60	
6,255.0	2.37	236.76	6,218.2	475.5	-55.6	-472.2	0.15	-0.11	2.20	
Last PZD Survey										
6,315.0	2.37	236.76	6,278.1	477.7	-57.0	-474.3	0.00	0.00	0.00	
Straightline Projection to TD										

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Site:	BMC D	MD Reference:	BMC D 21D-18-07-95 @ 5285.0usft (Plan KB)
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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)	
1,681.0	1,671.6	-3.4	-122.3	Last PZD Surface Survey
6,255.0	6,218.2	-55.6	-472.2	Last PZD Survey
6,315.0	6,278.1	-57.0	-474.3	Straightline Projection to TD

Checked By: _____ Approved By: _____ Date: _____

