



Ursa Operating Company, LLC

Rockies Region

BMC D

BMC D 21C-18-07-95

Wellbore #1

Design: Actual

End of Well Report

26 September, 2017



Company:	Ursa Operating Company, LLC	Local Co-ordinate Reference:	Well BMC D 21C-18-07-95
Project:	Rockies Region	TVD Reference:	BMC D 21C-18-07-95 @ 5285.0usft (Plan KB)
Site:	BMC D	MD Reference:	BMC D 21C-18-07-95 @ 5285.0usft (Plan KB)
Well:	BMC D 21C-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 " 0.0 usft	
				Latitude: 39.441572650	
				Longitude: -108.040739971	
				Grid Convergence: -1.60 °	

Well		BMC D 21C-18-07-95, SHL 39.441572650 -108.040739971				
Well Position	+N/-S	0.0 usft	Northing:	1,595,755.81 usft	Latitude:	39.441572650
	+E/-W	0.0 usft	Easting:	2,282,541.08 usft	Longitude:	-108.040739971
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	5,268.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	9/26/2017	9.69	65.53	51,469

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	306.19

Survey Program		Date	9/26/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
139.0	6,348.0	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	
139.0	1.67	291.26	139.0	2.0	0.7	-1.9	1.20	1.20	0.00	
168.0	2.07	288.53	168.0	2.9	1.1	-2.8	1.41	1.38	-9.41	
198.0	2.68	298.24	197.9	4.1	1.6	-3.9	2.43	2.03	32.37	
227.0	3.30	301.98	226.9	5.6	2.3	-5.2	2.24	2.14	12.90	
257.0	3.82	304.57	256.8	7.4	3.3	-6.8	1.81	1.73	8.63	
288.0	4.62	304.04	287.8	9.7	4.6	-8.7	2.58	2.58	-1.71	
317.0	5.32	306.16	316.6	12.2	6.1	-10.7	2.50	2.41	7.31	
348.0	6.08	309.03	347.5	15.3	8.0	-13.1	2.62	2.45	9.26	
377.0	6.86	309.28	376.3	18.6	10.0	-15.7	2.69	2.69	0.86	
407.0	7.65	309.14	406.1	22.4	12.4	-18.6	2.63	2.63	-0.47	
437.0	8.07	310.18	435.8	26.4	15.0	-21.8	1.48	1.40	3.47	
468.0	8.35	306.68	466.5	30.9	17.8	-25.2	1.85	0.90	-11.29	
499.0	8.57	307.96	497.1	35.4	20.6	-28.9	0.93	0.71	4.13	
529.0	8.96	308.92	526.8	40.0	23.4	-32.4	1.39	1.30	3.20	
559.0	9.23	308.40	556.4	44.7	26.4	-36.1	0.94	0.90	-1.73	
589.0	9.14	308.13	586.0	49.5	29.3	-39.9	0.33	-0.30	-0.90	
619.0	8.66	306.68	615.7	54.2	32.1	-43.6	1.77	-1.60	-4.83	
649.0	8.88	305.76	645.3	58.7	34.8	-47.3	0.87	0.73	-3.07	
679.0	9.10	307.52	674.9	63.4	37.6	-51.0	1.17	0.73	5.87	
709.0	8.61	305.76	704.6	68.0	40.4	-54.7	1.87	-1.63	-5.87	
738.0	7.94	304.66	733.3	72.2	42.8	-58.2	2.37	-2.31	-3.79	
768.0	7.87	306.37	763.0	76.3	45.2	-61.5	0.82	-0.23	5.70	
799.0	7.08	305.54	793.7	80.4	47.6	-64.8	2.57	-2.55	-2.68	
829.0	6.42	304.27	823.5	83.9	49.6	-67.7	2.26	-2.20	-4.23	
871.0	6.28	306.95	865.3	88.5	52.3	-71.4	0.78	-0.33	6.38	
916.0	6.37	305.23	910.0	93.5	55.2	-75.5	0.47	0.20	-3.82	

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Site:	BMC D	MD Reference:	BMC D 21C-18-07-95 @ 5285.0usft (Plan KB)
Well:	BMC D 21C-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)	
958.0	6.55	307.12	951.7	98.2	58.0	-79.3	0.66	0.43	4.50	
1,000.0	6.55	303.96	993.5	103.0	60.8	-83.2	0.86	0.00	-7.52	
1,042.0	6.77	304.31	1,035.2	107.9	63.5	-87.2	0.53	0.52	0.83	
1,082.0	7.03	303.43	1,074.9	112.7	66.2	-91.2	0.70	0.65	-2.20	
1,125.0	7.25	302.24	1,117.5	118.0	69.1	-95.7	0.62	0.51	-2.77	
1,167.0	7.38	303.91	1,159.2	123.4	72.0	-100.2	0.59	0.31	3.98	
1,209.0	7.60	307.43	1,200.8	128.8	75.2	-104.6	1.21	0.52	8.38	
1,251.0	7.92	307.00	1,242.5	134.5	78.6	-109.1	0.77	0.76	-1.02	
1,293.0	7.96	306.69	1,284.1	140.3	82.1	-113.8	0.14	0.10	-0.74	
1,335.0	8.31	305.19	1,325.6	146.2	85.6	-118.6	0.97	0.83	-3.57	
1,378.0	8.61	304.66	1,368.2	152.6	89.2	-123.8	0.72	0.70	-1.23	
1,420.0	8.96	302.90	1,409.7	159.0	92.8	-129.1	1.05	0.83	-4.19	
1,464.0	8.83	300.44	1,453.1	165.8	96.4	-134.9	0.91	-0.30	-5.59	
1,506.0	9.15	299.82	1,494.6	172.3	99.7	-140.6	0.80	0.76	-1.48	
1,548.0	9.10	304.57	1,536.1	178.9	103.2	-146.2	1.80	-0.12	11.31	
1,590.0	9.19	308.59	1,577.6	185.6	107.2	-151.5	1.54	0.21	9.57	
1,633.0	9.14	311.60	1,620.0	192.4	111.6	-156.8	1.12	-0.12	7.00	
1,677.0	9.40	313.93	1,663.4	199.5	116.4	-162.0	1.04	0.59	5.30	
Last PZD Surface Survey										
1,781.0	10.28	310.07	1,765.9	217.1	128.3	-175.2	1.06	0.85	-3.71	
1,865.0	9.84	306.90	1,848.6	231.8	137.4	-186.7	0.84	-0.52	-3.77	
1,950.0	9.05	302.20	1,932.5	245.7	145.3	-198.1	1.30	-0.93	-5.53	
2,034.0	8.83	311.52	2,015.5	258.7	153.1	-208.6	1.74	-0.26	11.10	
2,118.0	8.61	309.80	2,098.5	271.4	161.4	-218.2	0.41	-0.26	-2.05	
2,203.0	8.30	308.13	2,182.6	283.9	169.3	-227.9	0.47	-0.36	-1.96	
2,287.0	7.73	307.03	2,265.7	295.6	176.4	-237.2	0.70	-0.68	-1.31	
2,371.0	7.60	307.82	2,349.0	306.8	183.2	-246.1	0.20	-0.15	0.94	

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Survey										
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2,456.0	7.51	304.09	2,433.2	318.0	189.8	-255.2	0.59	-0.11	-4.39	
2,540.0	7.56	302.29	2,516.5	329.0	195.8	-264.4	0.29	0.06	-2.14	
2,624.0	7.73	315.78	2,599.8	340.1	202.8	-273.0	2.14	0.20	16.06	
2,709.0	7.51	314.72	2,684.0	351.2	210.8	-280.9	0.31	-0.26	-1.25	
2,793.0	7.43	314.94	2,767.3	362.0	218.5	-288.7	0.10	-0.10	0.26	
2,877.0	7.07	311.49	2,850.6	372.5	225.8	-296.4	0.67	-0.43	-4.11	
2,962.0	7.87	309.14	2,934.9	383.5	232.9	-304.8	1.01	0.94	-2.76	
3,046.0	7.69	305.50	3,018.2	394.9	239.8	-313.8	0.62	-0.21	-4.33	
3,130.0	7.16	304.22	3,101.5	405.7	246.0	-322.7	0.66	-0.63	-1.52	
3,214.0	8.31	304.13	3,184.7	417.0	252.4	-332.1	1.37	1.37	-0.11	
3,299.0	7.78	300.27	3,268.8	428.9	258.7	-342.2	0.89	-0.62	-4.54	
3,383.0	7.56	301.37	3,352.1	440.1	264.5	-351.8	0.31	-0.26	1.31	
3,467.0	7.69	306.42	3,435.4	451.2	270.7	-361.0	0.81	0.15	6.01	
3,552.0	7.56	305.98	3,519.6	462.5	277.3	-370.1	0.17	-0.15	-0.52	
3,636.0	7.69	310.07	3,602.9	473.6	284.2	-378.9	0.66	0.15	4.87	
3,721.0	7.43	308.20	3,687.1	484.8	291.3	-387.6	0.42	-0.31	-2.20	
3,847.0	6.15	300.93	3,812.2	499.6	299.8	-399.8	1.22	-1.02	-5.77	
3,889.0	6.06	300.18	3,854.0	504.1	302.0	-403.6	0.29	-0.21	-1.79	
3,974.0	4.09	297.32	3,938.7	511.5	305.7	-410.2	2.34	-2.32	-3.36	
4,058.0	3.91	294.69	4,022.5	517.3	308.3	-415.4	0.31	-0.21	-3.13	
4,114.3	3.09	303.29	4,078.7	520.7	309.9	-418.5	1.73	-1.46	15.28	
21C-18-07-95 TGT										
4,142.0	2.72	309.36	4,106.3	522.1	310.7	-419.6	1.73	-1.33	21.91	
4,227.0	2.46	314.90	4,191.2	525.9	313.3	-422.4	0.42	-0.31	6.52	
4,311.0	0.92	27.28	4,275.2	527.8	315.2	-423.4	2.80	-1.83	86.17	
4,437.0	0.40	345.18	4,401.2	528.3	316.5	-423.1	0.54	-0.41	-33.41	
4,480.0	0.40	346.83	4,444.2	528.5	316.8	-423.1	0.03	0.00	3.84	

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4,564.0	1.01	192.12	4,528.2	528.5	316.3	-423.3	1.65	0.73	-184.18	
4,648.0	1.41	187.19	4,612.2	527.7	314.6	-423.6	0.49	0.48	-5.87	
4,732.0	1.36	194.14	4,696.1	526.8	312.6	-424.0	0.21	-0.06	8.27	
4,817.0	1.49	217.47	4,781.1	526.4	310.7	-424.9	0.69	0.15	27.45	
4,901.0	1.71	218.62	4,865.1	526.5	308.9	-426.4	0.26	0.26	1.37	
4,985.0	0.48	228.42	4,949.1	526.6	307.7	-427.4	1.48	-1.46	11.67	
5,070.0	0.88	213.17	5,034.1	526.7	306.9	-428.0	0.51	0.47	-17.94	
5,154.0	1.32	232.24	5,118.0	526.9	305.8	-429.2	0.67	0.52	22.70	
5,238.0	0.41	102.04	5,202.0	526.9	305.1	-429.6	1.92	-1.08	-155.00	
5,322.0	1.23	68.50	5,286.0	526.1	305.4	-428.5	1.09	0.98	-39.93	
5,407.0	0.66	92.84	5,371.0	525.2	305.7	-427.2	0.81	-0.67	28.64	
5,491.0	0.97	141.84	5,455.0	524.2	305.1	-426.2	0.87	0.37	58.33	
5,575.0	1.10	164.53	5,539.0	522.8	303.8	-425.6	0.51	0.15	27.01	
5,660.0	1.63	108.09	5,624.0	521.0	302.6	-424.2	1.61	0.62	-66.40	
5,744.0	1.49	159.91	5,707.9	519.0	301.2	-422.7	1.63	-0.17	61.69	
5,828.0	1.36	179.46	5,791.9	517.5	299.2	-422.3	0.60	-0.15	23.27	
5,913.0	0.13	334.68	5,876.9	517.0	298.3	-422.4	1.74	-1.45	182.61	
5,997.0	0.66	199.02	5,960.9	516.9	297.9	-422.6	0.90	0.63	-161.50	
6,082.0	0.66	199.02	6,045.9	516.6	297.0	-422.9	0.00	0.00	0.00	
6,166.0	0.62	211.59	6,129.9	516.5	296.1	-423.3	0.17	-0.05	14.96	
6,293.0	1.36	196.56	6,256.9	515.9	294.1	-424.1	0.61	0.58	-11.83	
Last PZD Survey										
6,348.0	1.36	196.56	6,311.9	515.5	292.8	-424.4	0.00	0.00	0.00	
Straightline Projection to TD										

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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)	
1,677.0	1,663.4	116.4	-162.0	Last PZD Surface Survey
6,293.0	6,256.9	294.1	-424.1	Last PZD Survey
6,348.0	6,311.9	292.8	-424.4	Straightline Projection to TD

Checked By: _____ Approved By: _____ Date: _____

