



Ursa Operating Company, LLC

Rockies Region

BMC D

BMC D 21B-18-07-95

Wellbore #1

Design: Actual

End of Well Report

09 October, 2017



Company:	Ursa Operating Company, LLC	Local Co-ordinate Reference:	Well BMC D 21B-18-07-95
Project:	Rockies Region	TVD Reference:	BMC D 21B-18-07-95 @ 5285.0usft (Plan KB)
Site:	BMC D	MD Reference:	BMC D 21B-18-07-95 @ 5285.0usft (Plan KB)
Well:	BMC D 21B-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		Latitude:		39.441572650			
From:		Lat/Long		Easting:		2,282,541.08 usft		Longitude:		-108.040739971	
Position Uncertainty:		0.0 usft		Slot Radius:		13-3/16 "		Grid Convergence:		-1.60 °	

Well		BMC D 21B-18-07-95, SHL 39.441507025 -108.040853449				
Well Position	+N-S	0.0 usft	Northing:	1,595,732.81 usft	Latitude:	39.441507025
	+E-W	0.0 usft	Easting:	2,282,508.38 usft	Longitude:	-108.040853449
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	10/9/2017	9.68	65.53	51,465

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	329.30

Survey Program		Date	10/9/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
110.0	6,415.0	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	
110.0	1.58	265.64	110.0	0.7	-0.1	-1.5	1.44	1.44	0.00	
141.0	1.58	264.98	141.0	1.0	-0.2	-2.4	0.06	0.00	-2.13	
170.0	1.56	282.22	170.0	1.5	-0.1	-3.1	1.62	-0.07	59.45	
200.0	1.69	298.63	200.0	2.1	0.2	-3.9	1.60	0.43	54.70	
229.0	2.07	304.13	228.9	3.0	0.7	-4.7	1.45	1.31	18.97	
259.0	2.46	319.91	258.9	4.1	1.5	-5.6	2.44	1.30	52.60	
290.0	2.99	322.94	289.9	5.6	2.6	-6.5	1.77	1.71	9.77	
319.0	3.16	331.03	318.8	7.1	3.9	-7.4	1.61	0.59	27.90	
350.0	3.93	331.37	349.8	9.0	5.6	-8.3	2.48	2.48	1.10	
379.0	4.53	329.62	378.7	11.2	7.5	-9.3	2.12	2.07	-6.03	
409.0	5.52	329.80	408.6	13.8	9.7	-10.7	3.30	3.30	0.60	
439.0	6.42	331.51	438.4	16.9	12.4	-12.2	3.06	3.00	5.70	
470.0	7.78	333.80	469.2	20.8	15.9	-13.9	4.48	4.39	7.39	
501.0	8.89	334.42	499.9	25.2	19.9	-15.9	3.59	3.58	2.00	
531.0	10.26	331.85	529.4	30.2	24.3	-18.2	4.78	4.57	-8.57	
561.0	10.99	328.66	558.9	35.7	29.1	-20.9	3.12	2.43	-10.63	
592.0	11.78	327.56	589.3	41.9	34.3	-24.2	2.64	2.55	-3.55	
621.0	12.01	326.81	617.7	47.8	39.4	-27.4	0.96	0.79	-2.59	
651.0	12.21	325.16	647.0	54.1	44.6	-30.9	1.33	0.67	-5.50	
681.0	12.40	326.73	676.3	60.5	49.9	-34.5	1.28	0.63	5.23	
711.0	12.66	327.16	705.6	67.0	55.3	-38.0	0.92	0.87	1.43	
740.0	12.52	327.78	733.9	73.3	60.7	-41.4	0.67	-0.48	2.14	
770.0	12.84	328.12	763.2	79.9	66.2	-44.9	1.10	1.07	1.13	
801.0	13.03	330.35	793.4	86.8	72.2	-48.5	1.72	0.61	7.19	
831.0	13.19	332.26	822.6	93.6	78.2	-51.8	1.54	0.53	6.37	
873.0	13.36	332.26	863.5	103.3	86.7	-56.2	0.40	0.40	0.00	

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Site:	BMC D	MD Reference:	BMC D 21B-18-07-95 @ 5285.0usft (Plan KB)
Well:	BMC D 21B-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)	
917.0	13.23	331.47	906.3	113.4	95.6	-61.0	0.51	-0.30	-1.80	
960.0	13.18	331.78	948.2	123.2	104.3	-65.7	0.20	-0.12	0.72	
1,002.0	13.40	330.81	989.1	132.8	112.7	-70.3	0.75	0.52	-2.31	
1,044.0	13.49	331.86	1,029.9	142.6	121.3	-75.0	0.62	0.21	2.50	
1,086.0	13.18	330.94	1,070.8	152.3	129.8	-79.6	0.89	-0.74	-2.19	
1,128.0	13.32	330.46	1,111.7	161.9	138.2	-84.3	0.42	0.33	-1.14	
1,171.0	13.23	328.57	1,153.5	171.8	146.7	-89.4	1.03	-0.21	-4.40	
1,213.0	13.21	329.17	1,194.4	181.4	154.9	-94.3	0.33	-0.05	1.43	
1,255.0	12.30	332.46	1,235.4	190.6	163.0	-98.8	2.77	-2.17	7.83	
1,297.0	11.51	334.46	1,276.5	199.3	170.8	-102.7	2.12	-1.88	4.76	
1,339.0	11.49	334.53	1,317.6	207.6	178.3	-106.3	0.06	-0.05	0.17	
1,381.0	11.87	334.28	1,358.7	216.1	186.0	-110.0	0.91	0.90	-0.60	
1,424.0	11.95	330.85	1,400.8	224.9	193.9	-114.1	1.66	0.19	-7.98	
1,466.0	11.56	328.52	1,441.9	233.5	201.3	-118.4	1.46	-0.93	-5.55	
1,508.0	11.43	327.38	1,483.1	241.9	208.3	-122.8	0.62	-0.31	-2.71	
1,550.0	11.57	327.13	1,524.2	250.2	215.4	-127.4	0.35	0.33	-0.60	
1,592.0	11.56	327.82	1,565.4	258.7	222.5	-131.9	0.33	-0.02	1.64	
1,635.0	11.73	326.77	1,607.5	267.3	229.8	-136.6	0.63	0.40	-2.44	
1,679.0	12.13	328.00	1,650.6	276.4	237.5	-141.5	1.08	0.91	2.80	
1,710.0	12.00	331.21	1,680.9	282.9	243.0	-144.8	2.20	-0.42	10.35	
Last PZD Surface Survey										
1,801.0	12.48	334.98	1,769.8	302.1	260.2	-153.5	1.02	0.53	4.14	
1,885.0	13.43	332.30	1,851.7	320.9	277.1	-161.9	1.34	1.13	-3.19	
1,969.0	12.96	330.02	1,933.5	340.1	293.9	-171.1	0.83	-0.56	-2.71	
2,054.0	12.52	326.50	2,016.4	358.8	309.8	-181.0	1.05	-0.52	-4.14	
2,138.0	12.35	325.01	2,098.4	376.9	324.8	-191.1	0.43	-0.20	-1.77	
2,224.0	12.30	322.85	2,182.4	395.1	339.6	-201.9	0.54	-0.06	-2.51	

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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)	
2,310.0	11.69	329.58	2,266.5	412.9	354.4	-211.9	1.77	-0.71	7.83	
2,395.0	11.25	328.99	2,349.8	429.8	369.0	-220.5	0.54	-0.52	-0.69	
2,479.0	11.03	330.19	2,432.3	446.1	383.0	-228.7	0.38	-0.26	1.43	
2,564.0	10.76	330.01	2,515.7	462.1	396.9	-236.7	0.32	-0.32	-0.21	
2,650.0	12.44	330.54	2,600.0	479.4	411.9	-245.3	1.96	1.95	0.62	
2,738.0	12.30	330.11	2,685.9	498.3	428.3	-254.6	0.19	-0.16	-0.49	
2,824.0	12.26	330.28	2,770.0	516.6	444.2	-263.7	0.06	-0.05	0.20	
2,913.0	12.26	328.92	2,856.9	535.5	460.5	-273.3	0.32	0.00	-1.53	
3,001.0	11.78	326.72	2,943.0	553.8	476.0	-283.0	0.75	-0.55	-2.50	
3,086.0	11.29	325.67	3,026.3	570.7	490.1	-292.5	0.63	-0.58	-1.24	
3,172.0	12.44	326.24	3,110.4	588.4	504.8	-302.4	1.34	1.34	0.66	
3,260.0	12.42	336.83	3,196.4	607.2	521.3	-311.4	2.59	-0.02	12.03	
3,344.0	12.13	333.66	3,278.5	625.0	537.6	-318.9	0.87	-0.35	-3.77	
3,433.0	11.60	330.54	3,365.6	643.3	553.7	-327.4	0.93	-0.60	-3.51	
3,517.0	10.90	329.31	3,448.0	659.7	567.9	-335.6	0.88	-0.83	-1.46	
3,601.0	10.28	328.22	3,530.5	675.1	581.1	-343.6	0.78	-0.74	-1.30	
3,686.0	9.54	327.69	3,614.3	689.7	593.5	-351.4	0.88	-0.87	-0.62	
3,770.0	9.18	325.75	3,697.1	703.4	604.9	-358.9	0.57	-0.43	-2.31	
3,856.0	7.91	327.34	3,782.2	716.1	615.6	-365.9	1.50	-1.48	1.85	
3,941.0	7.65	326.46	3,866.4	727.6	625.2	-372.2	0.34	-0.31	-1.04	
4,025.0	6.90	324.79	3,949.7	738.2	634.0	-378.2	0.93	-0.89	-1.99	
4,109.0	6.28	320.83	4,033.2	747.8	641.7	-384.0	0.91	-0.74	-4.71	
4,160.1	6.09	325.41	4,083.9	753.3	646.1	-387.3	1.04	-0.38	8.98	
21B-18-07-95 TGT										
4,194.0	5.98	328.61	4,117.7	756.8	649.1	-389.3	1.04	-0.31	9.42	
4,278.0	4.17	346.06	4,201.3	764.1	655.8	-392.3	2.81	-2.15	20.77	
4,362.0	3.56	330.46	4,285.2	769.7	661.0	-394.3	1.44	-0.73	-18.57	

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4,449.0	2.64	356.30	4,372.0	774.2	665.4	-395.7	1.90	-1.06	29.70	
4,533.0	1.49	61.25	4,456.0	775.8	667.8	-394.9	2.88	-1.37	77.32	
4,617.0	1.45	69.86	4,540.0	775.6	668.7	-393.0	0.27	-0.05	10.25	
4,701.0	1.32	58.74	4,623.9	775.4	669.6	-391.1	0.35	-0.15	-13.24	
4,786.0	1.14	74.17	4,708.9	775.2	670.3	-389.5	0.44	-0.21	18.15	
4,872.0	0.88	83.31	4,794.9	774.7	670.6	-388.0	0.35	-0.30	10.63	
4,958.0	0.62	93.15	4,880.9	774.2	670.7	-386.9	0.34	-0.30	11.44	
5,044.0	0.48	105.72	4,966.9	773.7	670.6	-386.1	0.21	-0.16	14.62	
5,130.0	0.57	115.34	5,052.9	773.1	670.3	-385.3	0.15	0.10	11.19	
5,214.0	0.70	155.51	5,136.9	772.2	669.6	-384.8	0.54	0.15	47.82	
5,299.0	1.14	190.18	5,221.9	771.1	668.3	-384.7	0.81	0.52	40.79	
5,383.0	0.92	170.36	5,305.9	769.8	666.8	-384.7	0.49	-0.26	-23.60	
5,467.0	1.14	157.71	5,389.8	768.3	665.4	-384.3	0.38	0.26	-15.06	
5,552.0	1.05	157.27	5,474.8	766.7	663.9	-383.7	0.11	-0.11	-0.52	
5,636.0	1.49	181.13	5,558.8	765.0	662.1	-383.4	0.81	0.52	28.40	
5,721.0	0.31	12.64	5,643.8	764.3	661.2	-383.4	2.11	-1.39	-198.22	
5,805.0	0.53	337.80	5,727.8	764.8	661.8	-383.5	0.39	0.26	-41.48	
5,889.0	0.26	302.77	5,811.8	765.4	662.3	-383.8	0.42	-0.32	-41.70	
5,973.0	0.31	184.03	5,895.8	765.4	662.1	-383.9	0.58	0.06	-141.36	
6,058.0	0.62	225.95	5,980.8	765.1	661.6	-384.3	0.52	0.36	49.32	
6,142.0	0.70	220.86	6,064.8	764.8	660.9	-385.0	0.12	0.10	-6.06	
6,226.0	0.83	217.91	6,148.8	764.4	660.0	-385.7	0.16	0.15	-3.51	
6,311.0	1.07	209.94	6,233.8	763.8	658.8	-386.4	0.32	0.28	-9.38	
Last PZD Survey										
6,415.0	1.07	209.94	6,337.8	762.8	657.2	-387.4	0.00	0.00	0.00	
Straightline Projection to TD										

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Well:	BMC D 21B-18-07-95	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)	
1,710.0	1,680.9	243.0	-144.8	Last PZD Surface Survey
6,311.0	6,233.8	658.8	-386.4	Last PZD Survey
6,415.0	6,337.8	657.2	-387.4	Straightline Projection to TD

Checked By: _____ Approved By: _____ Date: _____

